APPENDIX 6-9

WATER BALANCE MODEL INPUTS AND OUTPUTS

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BLACK & VEATCH

TECHNICAL MEMORANDUM

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EAA Reservoir A-1
Work Order No. 5

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Task 5.3.6.2.2 Water Balance Model Inputs and Outputs

1. MODEL INPUT AND ASSUMPTIONS

1.1 Inflows

Reservoir inflows in the WBM consist of flows from the North New River Canal, STA 3/4 Supply Canal West, seepage collection canals, and precipitation. A description of each inflow, as included the *Water_Balance* worksheet, is provided below.

- **NNR Inflow –** Canal flow from the North New River Canal. This value was set to equal the daily average simulated flows at pump station G370, based on OOM's ECP 2010 run. The available flow at G370 is equal to:

  $$Flow\ at\ G370 = LKRSN1 + EARIN2$$

  Where

  LKRSN1 is the excess water from Lake Okeechobee via North New River Canal to Compartment 2 of the EAA A-1 reservoir

  EARIN2 is the inflow into Compartment 1 of the EAA A-1 reservoir from North New River Canal runoff.

- **Canal Inflow** – Canal flow from the STA 3/4 Supply Canal West. The STA 3/4 Supply Canal West branches from the Miami Canal and flows east connecting with the EAA A-1 reservoir along the south half of the west side. Flow at this canal was set equal the flow at pump station G372, based on OOM's ECP 2010 run.

  $$Flow\ at\ G372 = LKRSM1 + EARIN2$$

  Where

  LKRSM1 is the excess water from Lake Okeechobee via the Miami Canal to Compartment 2 of the EAA A-1 reservoir.

  EARIN1 is the inflow into Compartment 1 of the EAA A-1 reservoir from the Miami Canal basin runoff.

- **Collected Seepage** – Seepage flows from the EAA A-1 reservoir collected in the seepage canals. Based on the seepage analysis work performed by Black & Veatch during the Test Cells program, the collected seepage was found to be a function of reservoir water depth and seepage reduction alternative selected. For a scenario with an embankment

that includes a 30-feet deep seepage cutoff wall and a 20 feet deep seepage canal, the collected seepage may be approximated with the polynomial equation:

$$Collected\ Seepage = 0.0012x^2 - 0.0464x + 1.0752$$

Where

Collected Seepage is expressed as the percentage of the total seepage from the reservoir collected by the seepage canals.

X is the reservoir water depth in feet.

- **Precipitation** – Mean daily precipitation data were provided by IMC based on the inputs into the SFWMM. Precipitation inputs were for the 10 cells that encompass the EAA A-1 reservoir footprint. Inflow data was based on actual precipitation values for the POS. The average value of all 10 cells for each day in the POS was used as input data for the WBM.

1.2 Outflows

Reservoir outflows in the WBM consist of losses from evaporation, seepage, Irrigation Demands, Flows to STA 3/4, and excess volume flows. A description of each outflow, as included in the Water_Balance worksheet, is provided below.

- **Evaporation** – Mean daily Evapotranspiration (ET) data (for the POS) for the 10 cells that encompass the EAA A-1 reservoir footprint were provided by the IMC, based on the inputs into the SFWMM. The ET data used in the SFWMM were compared to historical direct evaporation data. Historical evaporation data were downloaded from DBHYDRO for the area in the vicinity of the EAA A-1 reservoir. The data provided by DBHYDRO is pan evaporation. A commonly accepted conversion of pan evaporation to actual evaporation is 70 percent of the pan evaporation equals actual evaporation. Using this conversion, a comparison of the ET data used in the SFWMM to actual evaporation data revealed little difference between the two values. As a result, the average value of the ET data from all 10 cells was used as the evaporation data for the WBM.
- **Seepage** – Total seepage from the reservoir as estimated by the seepage analysis work performed by Black & Veatch during the Test Cells program. The total seepage varies with reservoir water depth and depends on the seepage reduction alternative selected. For a scenario with an embankment that includes a 30-feet deep seepage cutoff wall and a 20 feet deep seepage canal, the total seepage may be approximated with the linear equation:

$$Total\ Seepage = 25.951x$$

Where

Total Seepage is the total seepage from the reservoir in cfs.

X is the reservoir water depth in feet.

- **Irrigation Demands** – Agricultural irrigation demands in the EAA to be supplied by the reservoir. Irrigation demands data were provided by the OOM based on the ECP 2010 run. The irrigation demands are equal to:

$$Irrigation\ Demands = EARMA1 + EARMA2 + EARNH1 + EARNH2$$

Where

EARMA1 is the outflow from Compartment 1 of the EAA A-1 reservoir to meet the Miami Canal basin supplemental irrigation demands.

EARMA2 is the outflow from Compartment 1 of the EAA A-1 reservoir to meet the Miami Canal basin supplemental irrigation demands not met by EARMA1.

EARNH1 is the outflow from Compartment 1 of the EAA A-1 reservoir to meet the North New River Canal / Hillsboro Canal basin supplemental irrigation demands.

EARNH2 is the outflow from Compartment 1 of the EAA A-1 reservoir to meet the North New River Canal / Hillsboro Canal basin supplemental irrigation demands not met by EARNH1.

- **Flows to STA 3/4** – Environmental Demands to STA 3/4 to be supplied by the reservoir. Flows to STA 3/4 data were provided by the OOM, based on the ECP 2010 run. The flows are equal to:

$$Flows\ to\ STA\ 3/4 = WCS4S + EVBLSS$$

Where

WCS4S is the surface water outflow from Compartment 2 of the EAA A-1 reservoir to WCA-3A via STA 3/4 for environmental water supply purposes.

EVBLSS is the subsurface water outflow down to 1.5 feet below land surface from Compartment 2 of the EAA A-1 reservoir to WCA-3A via STA 3/4 for environmental water supply purposes.

For the water balance analysis, it was assumed that the reservoir would supply the Flows to STA 3/4 before the Irrigation Demands, with the available storage after accounting for evaporation and seepage losses.

- **Excess Volume Outflow** – Flows discharged from the reservoir when full and inflows are greater than outflows. These flows are released to maintain the reservoir maximum water surface elevation (WSE).

1.3 Reservoir and System Characteristics

The following input information is included in the *Input* section of the WBM GUI. Detailed information on these input parameters is provided in the *User's Manual* in Section 4.

Reservoir characteristics

- Starting Conditions, Full / Empty
- Normal Pool Depth, ft
- Reservoir Bottom Elevation, ft

- Reservoir Minimum Depth, ft
- Bank Maximum Height, ft

Flow Captured

- Percentage of North New River Canal flow captured
- Percentage of STA 3/4 Supply Canal West flow captured
- Seepage canals flow captured

Available Flows

- North New River Canal
- Pump rate, cfs
- STA 3/4 Supply Canal West
- Pump rate, cfs

Reservoir Demands

- Percentage of Flows to STA 3/4 to be supplied by the reservoir
- Percentage of Agricultural Demands to be supplied by the reservoir
- Target Depth, ft

2. MODEL OUTPUT AND RESULTS

2.1 Results

WBM results for the scenario of a reservoir with a storage capacity of approximately 190,000 acre-feet at a water depth of 12.1 feet are presented in this appendix. The reservoir includes a 24-feet tall embankment with an interior bench and 3:1 side slopes.

The results show that, as a minimum, an additional 250 cfs from the North New River Canal would be required each day for the reservoir to meet 100 percent of the Flows to STA 3/4 and the specific irrigation demands in the EAA. This would result on a reservoir average depth of 10.2 inches and a depth greater than 11.1 inches over 50 percent of the POS. These values assume the following reservoir conditions:

- The reservoir starts empty and attempts to meet 100 percent of the Flows to STA 3/4 and specific irrigation demands.
- 100 percent capture of the available flows in the North New River Canal, STA 3/4 Supply Canal West, and seepage canals for inflow into the reservoir.
- A reservoir minimum depth of 0.5 feet, below which Flows to STA 3/4 and Irrigation Demands cannot be supplied.

Figures 3 through 9 in Section 4 illustrate the results of the run.

3. WBM USER'S MANUAL

3.1 Opening the Model

When opening the model, the user should click on *Enable Macros* on the window that appears to allow the Visual Basic programs to operate. The WBM is best viewed as a *Full Screen.* To change the view to *Full Screen*, the user should go to the *View* menu and select *Full Screen.*

The GUI consists of 12 worksheets that allow the user to view specific model results through the use of command buttons. The GUI worksheets are: *WBM, Notes, Storage, StorageZ, Stage, StageZ, NNR, STA, Irrig., IrrigZ, Env.,* and EnvZ. By default, all worksheets are hidden, as well as the gridlines, row and column headers, and horizontal and vertical scroll bars for the GUI worksheets. To unhide these features, the user should go to the *Tools* menu and select *Options*; then check the respective box for each feature under *Window options*.

The remaining worksheets include *Water_Balance, Stage-Storage, NNR_Flows, Miami_Flows, Rainfall, ET_Data, Irrigation, Envtl.,* and *Analyses*. All worksheets are protected by a password to secure the data within the model. The password is *acceler8*. It is highly recommended that worksheet protection should not be removed, unless a modification to the model is necessary.

3.2 Worksheets

3.2.1 WBM

The *WBM* worksheet is the main screen of the model and it is divided into an *Input* and *Output* section. Information for a specific run is entered in the *Input* section and model results are calculated in the *Output* section. A view of the worksheet is illustrated on Figure 1 in Section 4.

Input information includes:

- Reservoir characteristics
- Starting Conditions, Full / Empty. The model has the capability to evaluate a reservoir that is "Full" or "Empty" at the commencement of a run.
- Normal Pool Depth, ft.
- Reservoir Bottom Elevation, ft. The average reservoir bottom elevation is 8.6 feet (NAVD).
- Reservoir Minimum Depth, ft. A preliminary minimum depth has been set at 0.5 feet.
- Bank Maximum Height, ft. The preliminary bank maximum height has been set at 26 feet (NAVD).

Flow Captured – This subsection allows the user to enter the percentage of the flows in the canals that will be captured and sent to the reservoir.

- Percentage of North New River Canal flow
- Percentage of STA 3/4 Supply Canal West flow
- Percentage of Seepage canals flow

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Available Flows - Simulated available flows for inflow into the reservoir include flows in the North New River Canal and STA 3/4 Supply Canal West. The model allows the user to select between the two sources of flow, as well as the pumping rate into the reservoir.

- North New River Canal
- Pump rate, cfs
- STA 3/4 Supply Canal West
- Pump rate, cfs

Reservoir Demands – This subsection allows the user to enter the percentage of the demand flows that should be supplied by the reservoir.

- Percentage of Flows to STA 3/4
- Percentage of Irrigation Demands

Target Depth, ft – A depth may be selected to evaluate the number of days the reservoir is over the specified value.

Model Output information includes:

- Period of Simulation (POS), days
- Seepage
    - Maximum Total Seepage, cfs
    - Maximum Collected Seepage, cfs
    - Maximum Flow lost to Seepage, cfs
- Reservoir Minimum WSE, ft
- Reservoir Maximum WSE, ft – Based on the reservoir scenario being modeled.
- Reservoir Maximum Volume, acre-ft – The maximum volume of the reservoir at the maximum WSE.
- Number of Days Reservoir is Below Minimum WSE
    - Percentage from POS
- Maximum Number of Consecutive Days Reservoir is Below Minimum WSE
    - Number of Months
    - Year Occurring
- Number of Days Flows to STA 3/4 are Met – Demands are met when the reservoir is over the minimum WSE.
    - Percentage from POS
    - Percentage of Demand Met by Volume
- Number of Days Irrigation Demands are Met – Demands are met when the reservoir is over the minimum WSE.
    - Percentage from POS
    - Percentage of Demand Met by Volume

- Number of Days Reservoir is at Maximum WSE
    - Percentage from POS
- Available Flows in the North New River Canal, cfs
    - Maximum
    - Average
- Available Flows in the STA 3/4 Supply Canal West, cfs
    - Maximum
    - Average
- Target WSE, ft – This is the WSE that results from the Target Depth input.
- Number of Days Reservoir is Over Target Depth / WSE
    - Percentage from POS

Command buttons contained in the worksheet include:

- Review Notes – Directs the user to the Notes worksheet.
- Storage Graph – Directs the user to the Storage worksheet. A preview of this graph is also provided in the WBM worksheet.
- Stage Graph – Directs the user to the Stage worksheet. A preview of this graph is also provided in the WBM worksheet.
- NNR Flows – Directs the user to the NNR worksheet.
- STA Flows – Directs the user to the STA worksheet.
- Irrig. Demands – Directs the user to the Irrig. worksheet.
- Env. Demands – Directs the user to the Env. worksheet.

3.2.2 Notes

The *Notes* worksheet provides specific information on the input data used in the model, such as canal flows, precipitation, evaporation, reservoir characteristics, seepage, and demands. A view of the worksheet is illustrated on Figure 10 in Section 4.

3.2.3 Storage

The *Storage* worksheet provides a graph of reservoir storage versus time. It also includes a summary of the input and output values used and calculated in the WBM worksheet relevant to reservoir storage. The *Graph Zoom Tool* allows the user to zoom in on the graph by entering a Start Date and an End Date and then clicking on the Zoom Graph command button. The WBM command button directs the user back to the *WBM* worksheet. The Stage Graph command button directs the user to the *Stage* worksheet. A view of the worksheet is illustrated on Figure 4 in Section 4.

3.2.4 StorageZ

The *StorageZ* worksheet provides a graph of storage versus time that extends from the Start Date to End Date conditions entered in the *Storage* worksheet. A summary input of these conditions is also included in the worksheet.

There are two command buttons in the worksheet, WBM and Storage Graph. The WBM command button directs the user to the *WBM* worksheet and the Storage Graph command button directs the user back to the *Storage* worksheet. A view of the worksheet is illustrated on Figure 11 in Section 4.

3.2.5 Stage

The *Stage* worksheet provides a graph of reservoir stage and water depth versus time. It also includes a summary of the input and output values used and calculated in the WBM worksheet relevant to reservoir stage. The *Graph Zoom Tool* allows the user to zoom in on the graph by entering a Start Date and an End Date and then clicking on the Zoom Graph command button. The WBM command button directs the user to the *WBM* worksheet. The Storage Graph command button directs the user to the *Storage* worksheet. A view of the worksheet is illustrated on Figure 5 in Section 4.

3.2.6 StageZ

The *StageZ* worksheet provides a graph of stage and water depth versus time that extends from the Start Date to End Date conditions entered in the *Stage* worksheet. A summary input of these conditions is also included in the worksheet.

There are two command buttons in the worksheet, WBM and Stage Graph. The WBM command button directs the user to the *WBM* worksheet and the Stage Graph command button directs the user back to the *Stage* worksheet. A view of the worksheet is illustrated on Figure 12 in Section 4.

3.2.7 NNR

The *NNR* worksheet provides a graph of North New River Canal flows versus time. It also includes a summary of the input and output values used and calculated in the WBM worksheet relevant to North New River Canal flows. The WBM command button directs the user to the *WBM* worksheet. A view of the worksheet is illustrated on Figure 6 in Section 4.

3.2.8 STA

The *STA* worksheet provides a graph of STA 3/4 Supply Canal West flows versus time. It also includes a summary of the input and output values used and calculated in the WBM worksheet relevant to STA 3/4 Supply Canal West flows. The WBM command button directs the user to the *WBM* worksheet. A view of the worksheet is illustrated on Figure 7 in Section 4.

3.2.9 Irrig.

The *Irrig.* worksheet provides a graph of irrigation demands and irrigation demands met versus time. It also includes a summary of the input and output values used and calculated in the WBM worksheet relevant to irrigation demands. The *Graph Zoom Tool* allows the user to zoom in on

the graph by entering a Start Date and an End Date and then clicking on the Zoom Graph command button. The WBM command button directs the user to the *WBM* worksheet. The Env. Demands command button directs the user to the *Env.* worksheet. A view of the worksheet is illustrated on Figure 8 in Section 4.

3.2.10 IrrigZ

The *IrrigZ* worksheet provides a graph of irrigation demands and irrigation demands met versus time that extends from the Start Date to End Date conditions entered in the *Irrig.* worksheet. A summary input of these conditions is also included in the worksheet.

There are two command buttons in the worksheet, WBM and Irrig. Demands. The WBM command button directs the user to the *WBM* worksheet and the Irrig. Demands command button directs the user back to the *Irrig.* worksheet. A view of the worksheet is illustrated on Figure 13 in Section 4.

3.2.11 Env.

The *Env.* worksheet provides a graph of Flows to STA 3/4 and Flows to STA 3/4 met versus time. It also includes a summary of the input and output values used and calculated in the WBM worksheet relevant to Flows to STA 3/4. The *Graph Zoom Tool* allows the user to zoom in on the graph by entering a Start Date and an End Date and then clicking on the Zoom Graph command button. The WBM command button directs the user to the *WBM* worksheet. The Irrig. Demands command button directs the user to the *Irrig.* worksheet. A view of the worksheet is illustrated on Figure 9 in Section 4.

3.2.12 EnvZ

The *EnvZ* worksheet provides a graph of Flows to STA 3/4 and Flows to STA 3/4 met versus time that extends from the Start Date to End Date conditions entered in the *Env.* worksheet. A summary input of these conditions is also included in the worksheet.

There are two command buttons in the worksheet, WBM and Env. Demands. The WBM command button directs the user to the *WBM* worksheet and the Env. Demands command button directs the user back to the *Env.* worksheet. A view of the worksheet is illustrated on Figure 14 in Section 4.

3.2.13 Water_Balance

The *Water_Balance* worksheet is the central worksheet of the WBM, where the actual water balance analysis is performed. It contains a Notes section in the upper left portion of the worksheet, where information on model data and reservoir and system characteristics is provided. A view of the worksheet is illustrated on Figure 2 in Section 4. The main columns of the worksheet provide the following information:

Date – Column D. Identifies a specific date from the POS.

- NNR Inflow (cfs) – Column E. Provides the available flow in the North New River Canal from the NNR_Flows worksheet, if the flow has been allowed in the WBM worksheet.

- Pump Rate (cfs) – Column F. Allows for the North New River Canal pump rate specified in the WBM, if the available flow is greater than the pump rate; otherwise, the available flow value is used.

Pump 1 (cfs) – Column G. Allows for pump flow from the North New River Canal into the reservoir, if the WSE in the reservoir is below the maximum WSE. This column also accounts for pump efficiency.

Pump 2 (cfs) – Column H. Same as Column G, but allows for the operation of a second pump. Additional pumps may be included, once the total number of pumps is identified during the design of the pump station facility.

Total (cfs) – Column I. Identifies the total flow in cfs moved by the pumps from the North New River Canal into the reservoir.

Total (acre-ft) – Column J. Same as Column I, but in acre-ft.

- Canal Inflow (cfs) – Column K. Provides the available flow in the STA 3/4 Supply Canal West from the Miami_Flows worksheet, if the flow has been allowed in the WBM worksheet. It was assumed that the available flow in the STA 3/4 Supply Canal West equals to the flow available at G372 (from the Miami Canal).
- Pump Rate (cfs) – Column L. Allows for the STA 3/4 Supply Canal West pump rate specified in the WBM, if the available flow is greater than the pump rate; otherwise, the available flow value is used.

Pump 1 (cfs) – Column M. Allows for pump flow from the STA 3/4 Supply Canal West into the reservoir, if the WSE in the reservoir is below the maximum WSE. This column also accounts for pump efficiency.

Pump 2 (cfs) – Column N. Same as Column M, but allows for the operation of a second pump. Additional pumps may be included, once the total number of pumps is identified during the design of the pump station facility.

Total (cfs) – Column O. Identifies the total flow in cfs moved by the pumps from the STA 3/4 Supply Canal West into the reservoir.

Total (acre-ft) – Column P. Same as Column O, but in acre-ft.

Collected Seepage (cfs) – Column Q. Identifies the collected seepage from the reservoir per the results of the Test Cells program and seepage analysis work performed by Black & Veatch.

Pump 1 (cfs) – Column R. Allows for pump flow from the seepage canals into the reservoir, if the WSE in the reservoir is below the maximum WSE. This column also accounts for pump efficiency.

Pump 2 (cfs) – Column S. Same as Column M, but allows for the operation of a second pump. Additional pumps may be included, once the total number of pumps is identified during the design of the pump station facility.

Total (cfs) – Column T. Identifies the total flow moved in cfs by the pumps from the seepage canals into the reservoir.

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Total (acre-ft) – Column U. Same as column T, but in acre-ft.

- Precip. (ft) – Column V. Identifies the average precipitation into the reservoir, as listed in the Rainfall worksheet.

Precip. Inflow (acre-ft) – Column W. It is the total precipitation inflow into the reservoir, calculated as the value from Column V times the top-of-bank area of the reservoir.

Total Inflow (acre-ft) – Column X. Identifies the total inflow into the reservoir for a single day during the POS.

Begin of Day Conditions Stage (ft) – Column Y. Identifies the Begin of Day stage of the reservoir. Allows for the operation of a reservoir that starts empty or full at the commencement of a run.

- Begin of Day Conditions Surface Area (ac) – Column Z. It is the Begin of Day water surface area in the reservoir, based on the Begin of Day stage and the reservoir's stage-area-volume relationship identified in the Stage-Storage worksheet. This formula only applies to the first day of the run; for the other days, it equals to the End of Day water surface area.
- Begin of Day Conditions Volume (acre-ft) – Column AA. It is the Begin of Day water volume in the reservoir, based on the Begin of Day stage and the reservoir's stage-area-volume relationship identified in the Stage-Storage worksheet. This formula only applies to the first day of the run; for the other days, it equals to the End of Day water volume.
- Evap. (ft) – Column AB. Identifies the average evaporation from the reservoir, as listed in the ET_Data worksheet.

Evap. Outflow (acre-ft) – Column AC. It is the total evaporation outflow from the reservoir, calculated as the value from Column AB times the Begin of Day surface area (Column Z). Evaporation outflow only occurs when there is water in the reservoir.

Seepage (cfs) – Column AD. Identifies the seepage from the reservoir per the results of the Test Cells program and seepage analysis work performed by Black & Veatch. Seepage from the reservoir only occurs when there is water in the reservoir.

Seepage (acre-ft) – Column AE. Same as column AD, but in acre-ft.

Irrigation Demands Met (acre-ft) – Column AF. Identifies the irrigation demands supplied by the reservoir after accounting for evaporation, seepage, and Flows to STA 3/4. Irrigation demands are supplied by the reservoir only if the WSE in the reservoir is greater than the minimum established WSE.

Flows to STA 3/4 Met – Column AG. Identifies the Flows to STA 3/4 supplied by the reservoir after accounting for evaporation and seepage losses. It was assumed that the reservoir would supply the Flows to STA 3/4 before the Irrigation demands. Flows to STA 3/4 are supplied from the reservoir only if the WSE in the reservoir is greater than the minimum established WSE.

Water Balance Model Inputs and Outputs

Excess Vol. Outflow (acre-ft) – Column AH. Identifies the flows discharged from the reservoir when full and inflows are greater than outflows. These flows are released to maintain the reservoir maximum WSE.

Total Outflow (acre-ft) – Column AI. Identifies the total outflow from the reservoir for a single day during the POS. If the required outflow is greater than the actual volume in the reservoir, then the total outflow equals the actual volume in the reservoir.

Temporary Day Conditions Volume (acre-ft) – Column AJ. It is the Temporary Day water volume in the reservoir after adding and subtracting inflows and outflows.

- Temporary Day Conditions Stage (ft) – Column AK. Identifies the Temporary Day stage of the reservoir, based on the Temporary Day volume and stage-area-volume relationship listed in the Stage-Storage worksheet.
- Temporary Day Conditions Surface Area (ac) – Column AL. It is the Temporary Day water surface area in the reservoir, based on the Temporary Day stage and stage-area-volume relationship identified in the Stage-Storage worksheet.

End of Day Conditions Evap. Vol. Change (acre-ft) – Column AM. Identifies the evaporation volume change from Begin of Day to Temporary Day conditions.

End of Day Conditions Volume (acre-ft) – Column AN. Identifies the End of Day water volume in the reservoir.

- End of Day Conditions Stage (ft) – Column AO. Identifies the End of Day stage of the reservoir, based on the End of Day volume and stage-area-volume relationship listed in the Stage-Storage worksheet.
- End of Day Conditions Surface Area (ac) – Column AP. It is the End of Day water surface area in the reservoir, based on the End of Day stage and stage-area-volume relationship identified in the Stage-Storage worksheet.

Additional calculations in the *Water_*Balance worksheet include:

Water Depth (ft) – Column AR. Identifies the End of Day water depth in the reservoir.

Bott. Elev.<=x<=Min. WSE, Blank – Column AS. Identifies when the reservoir stage is less than or equal to the minimum WSE.

CountBlank, Bott. Elev.<=x<=Min. WSE – Column AT. Calculates the number of times during the POS that the reservoir stage is less than or equal to the minimum WSE.

x=Bott. Elev., Blank – Column AU. Identifies when the reservoir is empty.

CountBlank, x=Bott. Elev. – Column AV. Calculates the number of times during the POS that the reservoir is empty.

Count, Bott. Elev.<x<=Min. WSE – Column AW. Calculates the number of times during the POS that the reservoir is not empty, but the stage is less than or equal to the minimum WSE.

Count, Consecutive Days of x<=Min. WSE – Column AX. Calculates the number of consecutive days the reservoir stage is less than or equal to the minimum WSE.

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Maximum No. of Consecutive Days when x<=Min. WSE – Column AY. Calculates the maximum number of consecutive days the reservoir stage is less than or equal to the minimum WSE.

Year Occurring – Column AZ. Provides the year when the maximum period of consecutive days the reservoir stage is less than or equal to the minimum WSE ends.

- Target Depth, Blank – Column BA. Identifies when the reservoir water depth is greater than the Target Depth identified in the Input section of the WBM worksheet.

CountBlank, x > Target Depth – Column BB. Calculates the number of days the reservoir water depth is greater than the Target Depth.

x=Max. WSE, Blank – Column BC. Identifies when the reservoir is full.

CountBlank, x=Max. WSE – Column BD. Calculates the number of times during the POS that the reservoir is full.

- No. of Days Irrigation Demands > 0 – Column BF. Identifies when the irrigation demands, as listed in the Irrigation worksheet, are greater than zero.

CountBlank, Irrigation Demands > 0 – Column BG. Calculates the number of times during the POS that irrigation demands are greater than zero.

Bott. Elev.<=x<=Min. WSE, Irrigation > 0, Irrigation Demands Not Met, Blank – Column BH. Identifies when the reservoir stage is less than or equal to the minimum WSE and an irrigation demand exist. This would result on the reservoir not being able to supply the irrigation demand.

Irrigation Demands Not Met, CountBlank, Bott. Elev.<=x<=Min. WSE, Irrigation > 0 – Column BI. Calculates the number of days that irrigation demands are met and not met.

- No. of Days Environmental Demands > 0 – Column BJ. Identifies when the environmental demands, as listed in the Envtl. worksheet, are greater than zero.

CountBlank, Environmental Demands > 0 – Column BK. Calculates the number of times during the POS that environmental demands are greater than zero.

Bott. Elev.<=x<=Min. WSE, Envtl. > 0, Environmental Demands Not Met, Blank – Column BL. Identifies when the reservoir stage is less than or equal to the minimum WSE and an environmental demand exist. This would result on the reservoir not being able to supply the environmental demand.

Environmental Demands Not Met, CountBlank, Bott. Elev.<=x<=Min. WSE, Envtl. > 0 – Column BM. Calculates the number of days that environmental demands are met and not met.

Check for Irrig. Demands when Tot. Outflow = Tot. Inflow – Column BO. Identifies if an irrigation demand exist when the total outflow from the reservoir equals the total inflow. This serves as a check to the values of Irrigation Demands Met in column AF.

CountBlank for Irrig. Demands when Tot. Outflow = Tot. Inflow – Column BP. Calculates the number of days when the scenario in Column BO occurs. A value of zero is the checked value.

Check for Envtl. Demands when Tot. Outflow = Tot. Inflow – Column BQ. Identifies if an environmental demand exist when the total outflow from the reservoir equals the total inflow. This serves as a check to the values of Flows to STA 3/4 Met in column AG.

CountBlank for Envtl. Demands when Tot. Outflow = Tot. Inflow – Column BR. Calculates the number of days when the scenario in Column BQ occurs. A value of zero is the checked value.

% of Irrig. Demands Met – Column BS. Identifies the percentage of the irrigation demands met for a single day during the POS.

% of Envtl. Demands Met – Column BT. Identifies the percentage of the environmental demands met for a single day during the POS.

3.2.14 Stage-Storage

The *Stage-Storage* worksheet provides the stage-area-volume relationship for the reservoir. A view of the worksheet is illustrated on Figure 15 in Section 4.

3.2.15 NNR_Flows

The *NNR_Flows* worksheet provides the available flows in the North New River Canal at G370, as simulated by the OOM in the ECP 2010 run. A view of the worksheet is illustrated on Figure 16 in Section 4.

3.2.16 Miami_Flows

The *Miami_Flows* worksheet provides the available flows in the Miami Canal at G372, as simulated by the OOM in the ECP 2010 run. It was assumed that the available flows at the STA 3/4 Supply Canal West would equal the flows at G372. A view of the worksheet is illustrated on Figure 17 in Section 4.

3.2.17 Rainfall

The Rainfall worksheet provides mean daily precipitation data for the 10 cells that encompass the reservoir, based on the inputs into the SFWMM. This information was provided by the IMC. A view of the worksheet is illustrated on Figure 18 in Section 4.

3.2.18 ET_Data

The *ET_Data* worksheet provides mean daily ET data for the 10 cells that encompass the reservoir, based on the inputs into the SFWMM. This information was provided by the IMC. A view of the worksheet is illustrated on Figure 19 in Section 4.

3.2.19 Irrigation

The *Irrigation* worksheet provides the agricultural irritation demands to be supplied by the reservoir, as simulated by the OOM in the ECP 2010 run. A view of the worksheet is illustrated on Figure 20 in Section 4.

3.2.20 Envtl.

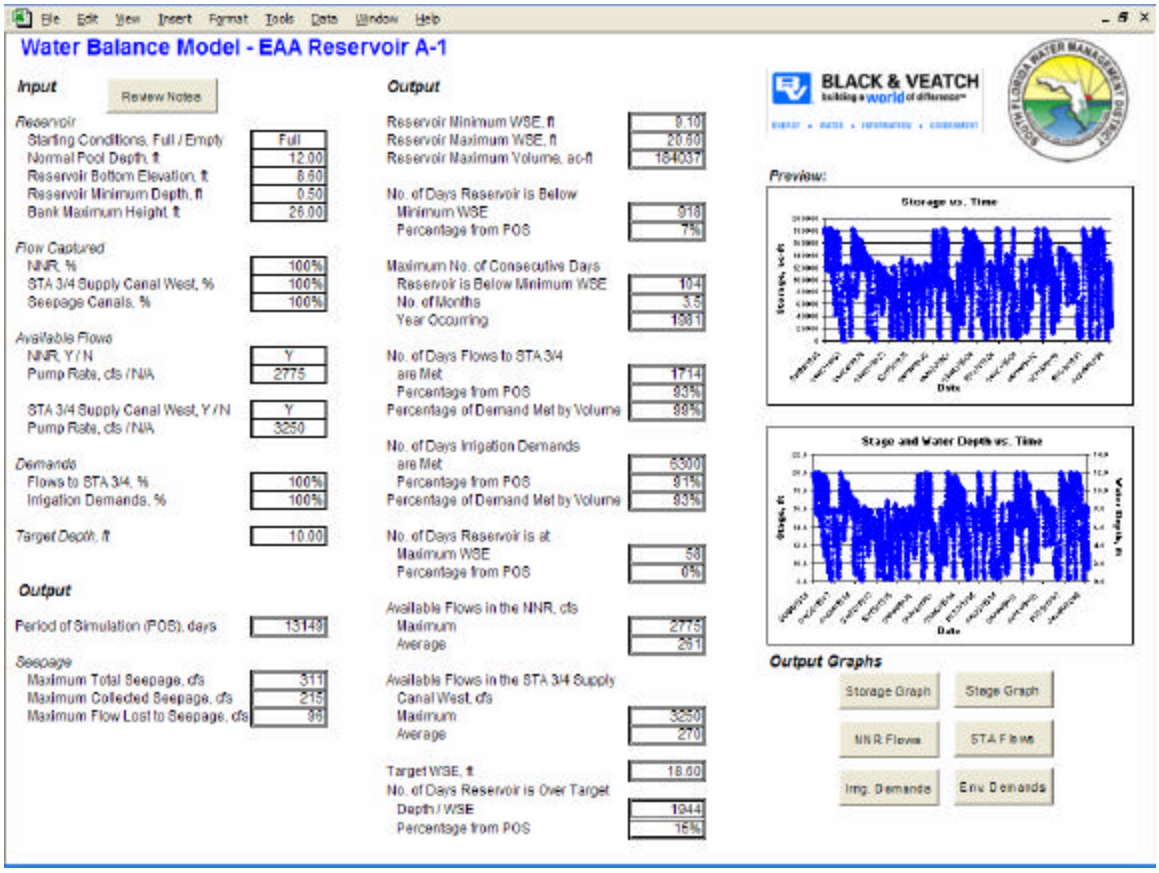
The *Envtl.* worksheet provides the Flows to STA 3/4 to be supplied by the reservoir, as simulated by the OOM in the ECP 2010 run. A view of the worksheet is illustrated on Figure 21 in Section 4.

3.2.21 Analyses

The *Analyses* worksheet provides flow analyses for the North New River Canal and the Miami Canal. A summary of the flow analysis is included in the top left section of the worksheet. A view of the worksheet is illustrated on Figure 22 in Section 4.

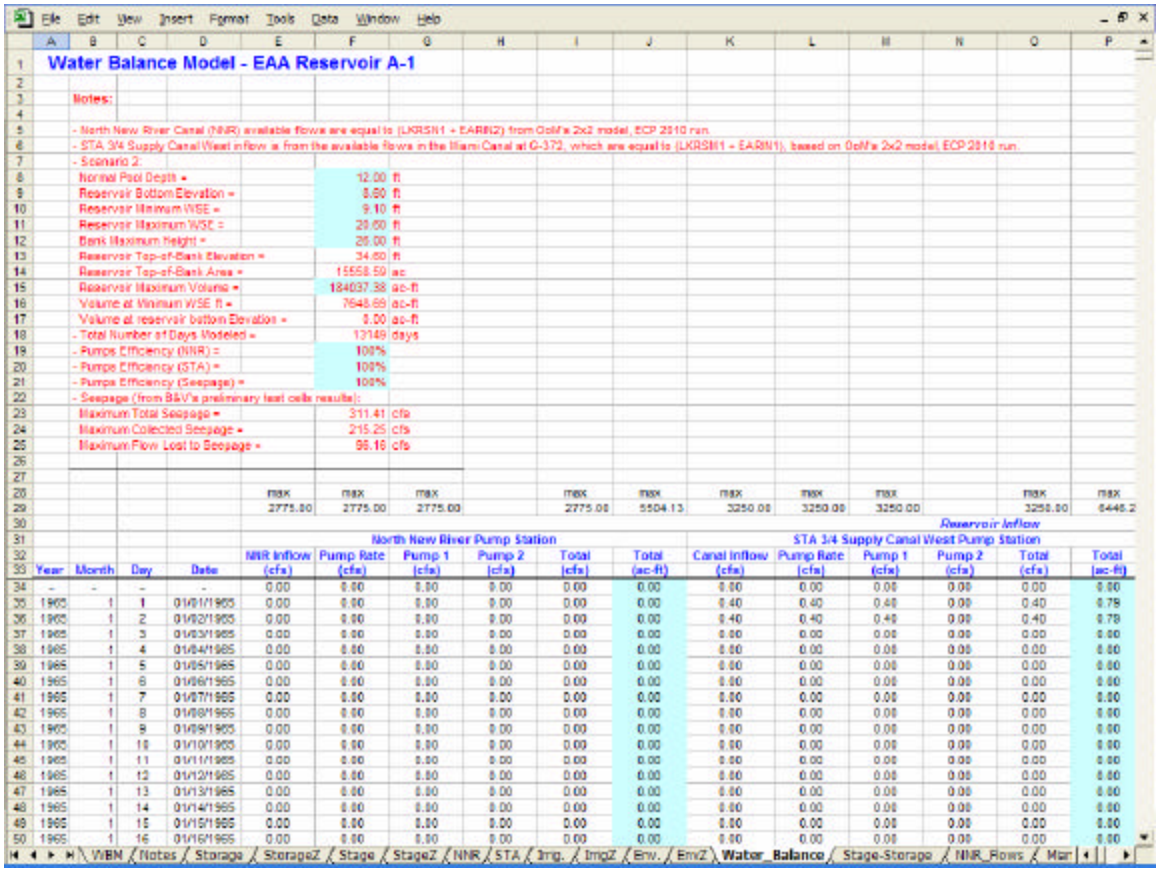
FIGURES

Figure 1 Water Balance Model Graphic User Interface



Water Balance Model Inputs and Outputs

Figure 2 View of Water_Balance Worksheet



File Edit View Insert Format Tools Data Window Help

Water Balance Model - EAA Reservoir A-1

Notes:

- North New River Canal (NNR) available flows are equal to (LKRSN1 + EARN2) from GoM's 2x2 model, ECP 2010 run.
- STA 3/4 Supply Canal West inflow is from the available flows in the Miami Canal at G-372, which are equal to (LKRSM1 + EARN1), based on GoM's 2x2 model, ECP 2010 run.
- Scenario 2:

Normal Pool Depth =	12.00	ft
Reservoir Bottom Elevation =	8.60	ft
Reservoir Minimum WSE =	9.10	ft
Reservoir Maximum WSE =	20.60	ft
Bank Maximum Height =	26.00	ft
Reservoir Top-of-Bank Elevation =	34.60	ft
Reservoir Top-of-Bank Area =	15558.59	ac
Reservoir Maximum Volume =	184037.38	ac-ft
Volume at Minimum WSE ft =	7648.69	ac-ft
Volume at reservoir bottom Elevation =	0.00	ac-ft
- Total Number of Days Modeled =	13149	days
- Pumps Efficiency (NNR) =	100%	
- Pumps Efficiency (STA) =	100%	
- Pumps Efficiency (Seepage) =	100%	
- Seepage (from B&V's preliminary test cells results):		
Maximum Total Seepage =	311.41	cfs
Maximum Collected Seepage =	215.25	cfs
Maximum Flow Lost to Seepage =	96.16	cfs

				max	max	max		max	max	max	max	max		max	max		
				2775.00	2775.00	2775.00		2775.00	5504.13	3250.00	3250.00	3250.00		3250.00	6446.2		
															Reservoir Inflow		
				North New River Pump Station						STA 3/4 Supply Canal West Pump Station							
Year	Month	Day	Date	NNR Inflow (cfs)	Pump Rate (cfs)	Pump 1 (cfs)	Pump 2 (cfs)	Total (cfs)	Total (ac-ft)	Canal Inflow (cfs)	Pump Rate (cfs)	Pump 1 (cfs)	Pump 2 (cfs)	Total (cfs)	Total (ac-ft)		
-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	1	01/01/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.40	0.00	0.40	0.79		
1965	1	2	01/02/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.40	0.00	0.40	0.79		
1965	1	3	01/03/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	4	01/04/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	5	01/05/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	6	01/06/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	7	01/07/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	8	01/08/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	9	01/09/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	10	01/10/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	11	01/11/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	12	01/12/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	13	01/13/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	14	01/14/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	15	01/15/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1965	1	16	01/16/1965	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

WBN Notes Storage StorageZ Stage StageZ NNR STA Irrg. ImpZ Env. EnvZ Water_Balance Stage-Storage NNR_Flows Mar

Water Balance Model Inputs and Outputs

Figure 3 WBM Input and Output Screen for the Evaluated Alternative

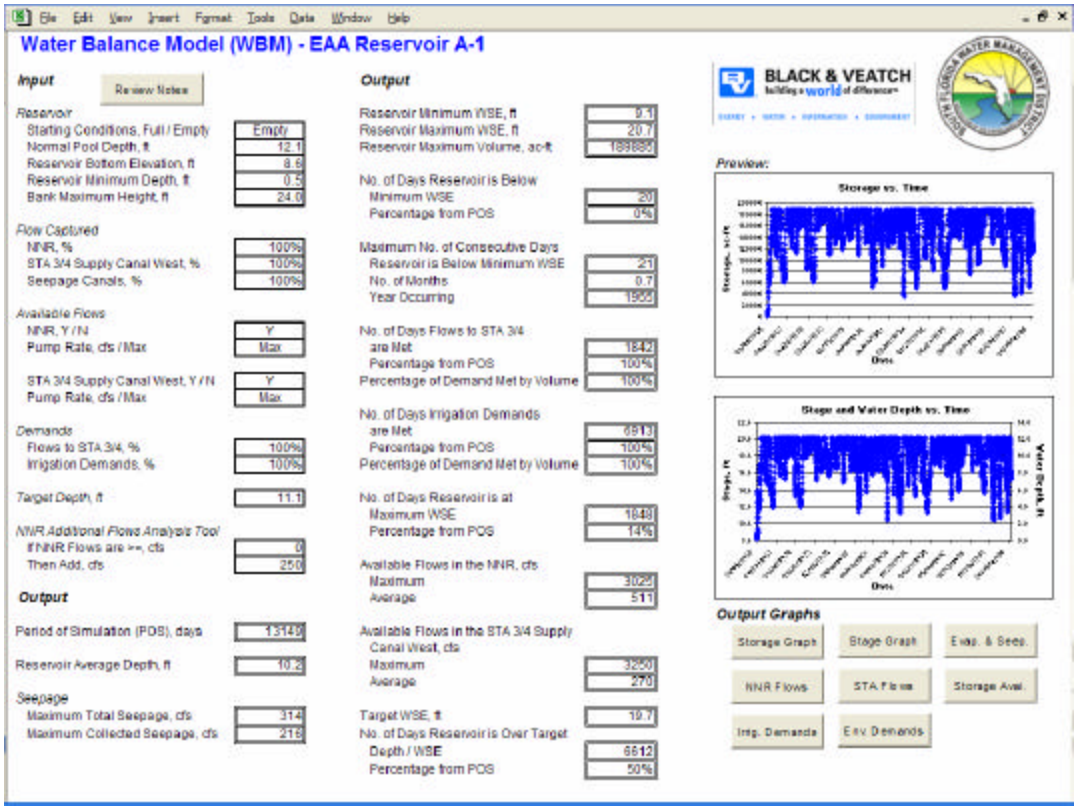
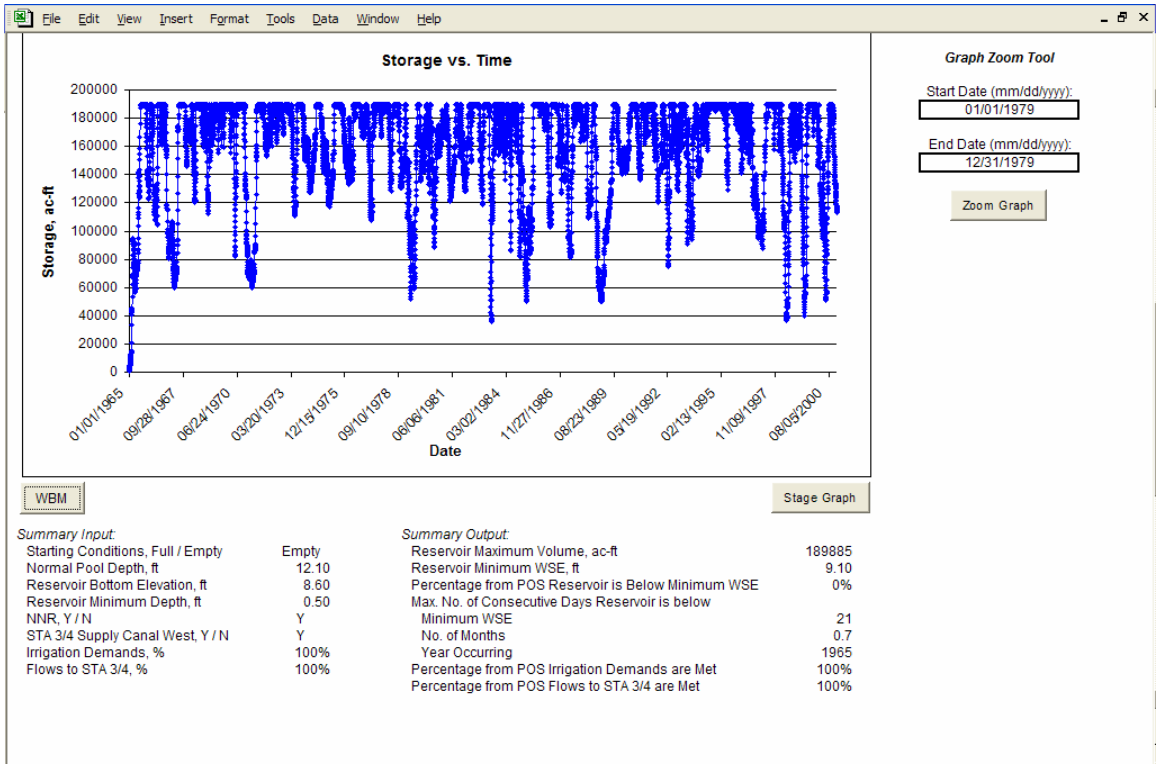


Figure 4 Storage versus Time for the Evaluated Alternative



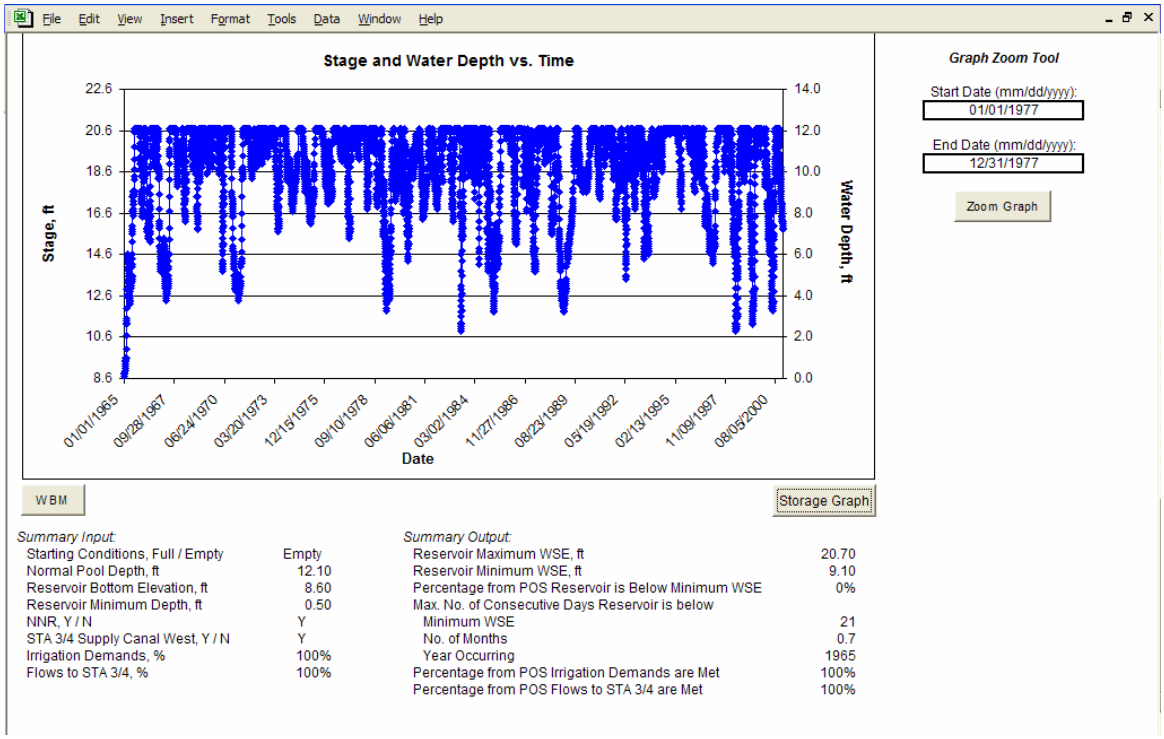
Summary Input:

Starting Conditions, Full / Empty	Empty
Normal Pool Depth, ft	12.10
Reservoir Bottom Elevation, ft	8.60
Reservoir Minimum Depth, ft	0.50
NNR, Y / N	Y
STA 3/4 Supply Canal West, Y / N	Y
Irrigation Demands, %	100%
Flows to STA 3/4, %	100%

Summary Output:

Reservoir Maximum Volume, ac-ft	189885
Reservoir Minimum WSE, ft	9.10
Percentage from POS Reservoir is Below Minimum WSE	0%
Max. No. of Consecutive Days Reservoir is below	
Minimum WSE	21
No. of Months	0.7
Year Occurring	1965
Percentage from POS Irrigation Demands are Met	100%
Percentage from POS Flows to STA 3/4 are Met	100%

Figure 5 Stage and Water Depth versus Time for the Evaluated Alternative



Summary Input:

Starting Conditions, Full / Empty	Empty
Normal Pool Depth, ft	12.10
Reservoir Bottom Elevation, ft	8.60
Reservoir Minimum Depth, ft	0.50
NNR, Y / N	Y
STA 3/4 Supply Canal West, Y / N	Y
Irrigation Demands, %	100%
Flows to STA 3/4, %	100%

Summary Output:

Reservoir Maximum WSE, ft	20.70
Reservoir Minimum WSE, ft	9.10
Percentage from POS Reservoir is Below Minimum WSE	0%
Max. No. of Consecutive Days Reservoir is below	
Minimum WSE	21
No. of Months	0.7
Year Occurring	1965
Percentage from POS Irrigation Demands are Met	100%
Percentage from POS Flows to STA 3/4 are Met	100%

Figure 6 North New River Canal Flows versus Time for the Evaluated Alternative

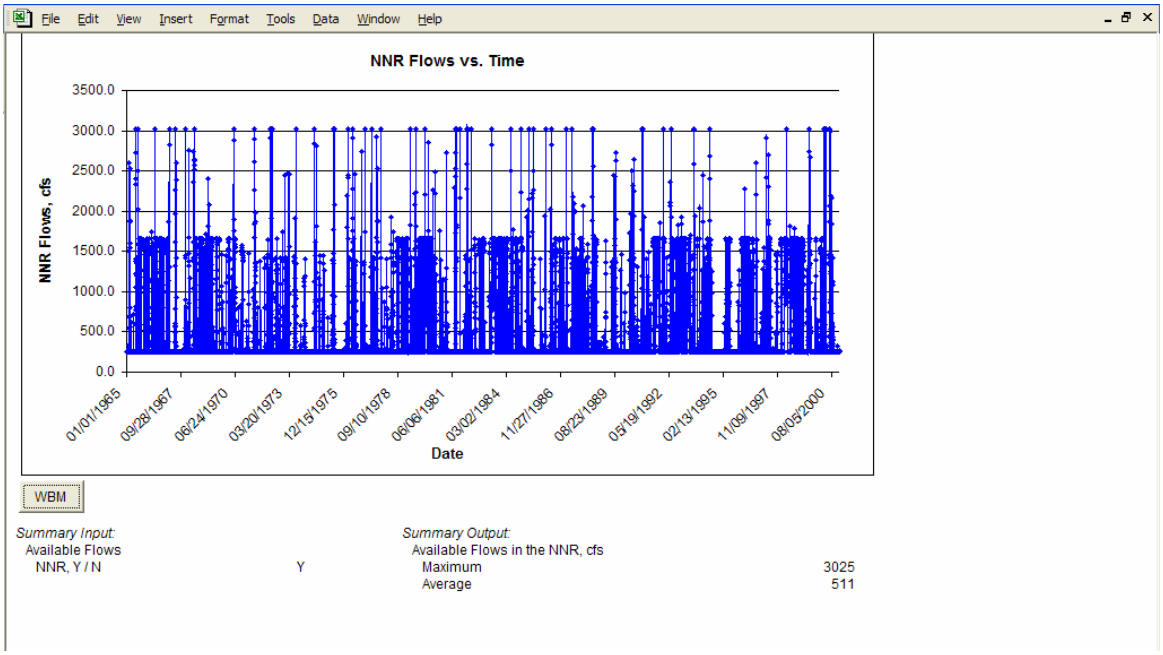


Figure 7 STA 3/4 Supply Canal West Flows versus Time for the Evaluated Alternative

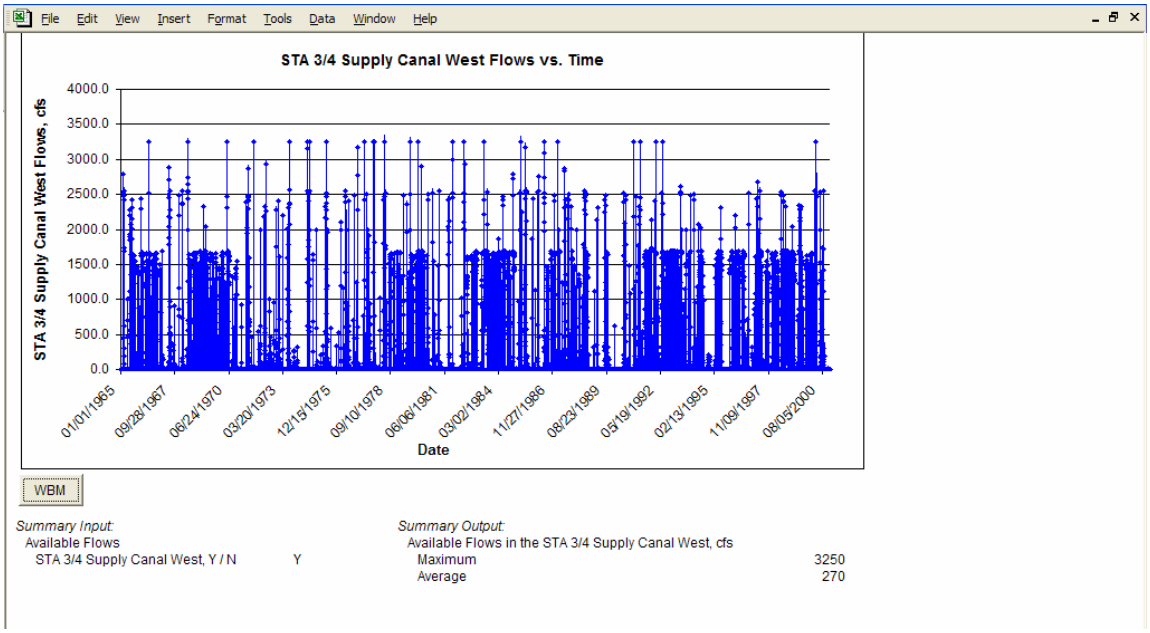


Figure 8 Irrigation Demands and Irrigation Demands Met versus Time for the Evaluated Alternative

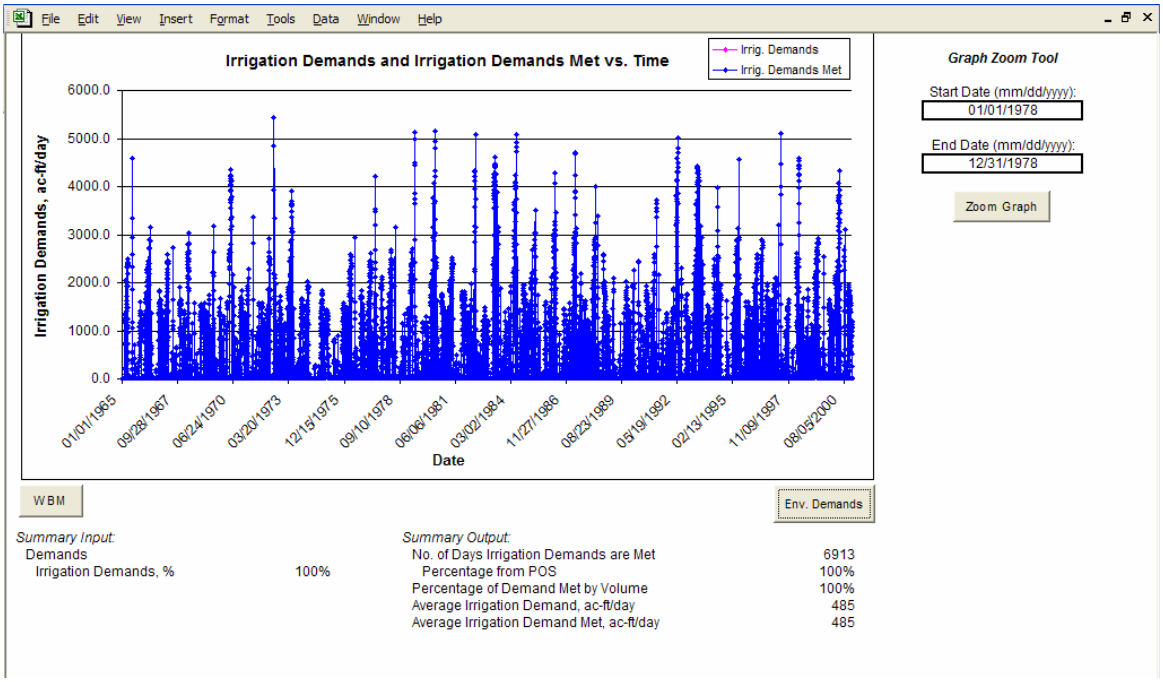


Figure 9 Flows to STA 3/4 and Flows to STA 3/4 Met versus Time for the Evaluated Alternative

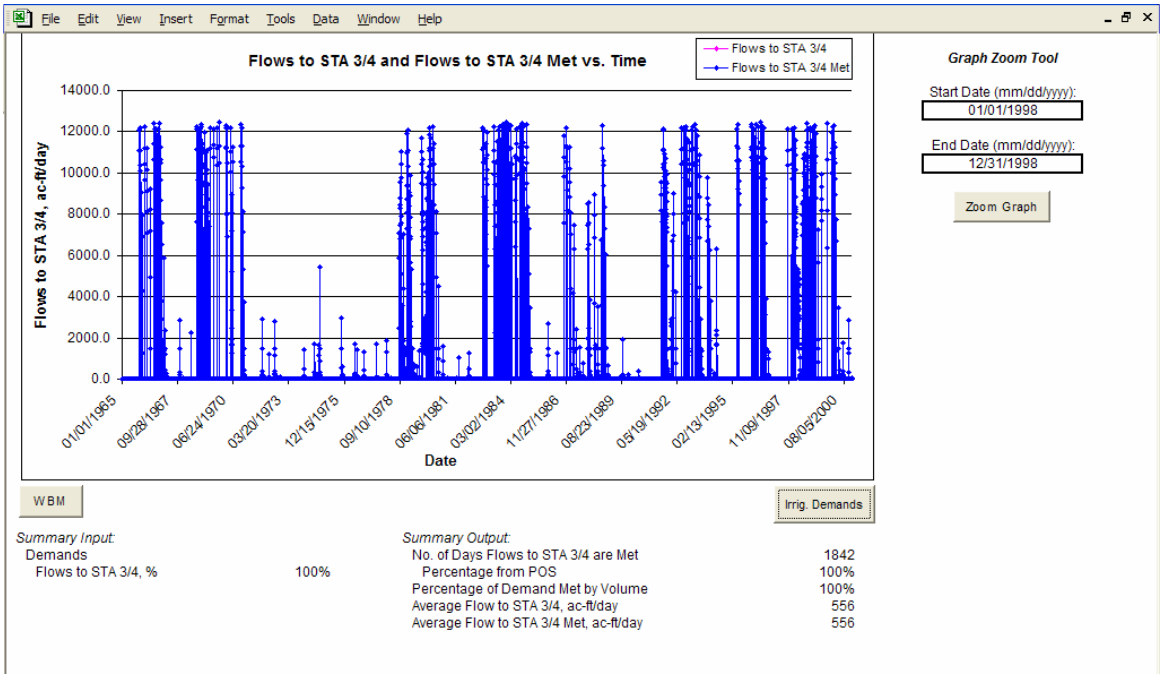


Figure 10 Notes Worksheet

File Edit View Insert Format Tools Data Window Help

Review Notes:

- Period of Simulation (POS) is from January 1, 1965 to December 31, 2000.

- All elevations are in NAVD.

- North New River Canal (NNR) available flows are equal to (LKRSN1 + EARIN2) from OoM's 2x2 model, ECP 2010 run for a 190,000 ac-ft reservoir, received on June 17, 2005.

- STA 3/4 Supply Canal West inflow is from the available flows in the Miami Canal at G-372, which are equal to (LKRSM1 + EARIN1), based on OoM's 2x2 model, ECP 2010 run for a 190,000 ac-ft reservoir, received on June 17, 2005.

- Precipitation data is from IMC's 360,000 2x2 model run received on December 22, 2004. The data contained daily precipitation information for each of the 10 cells that represent the reservoir. The average value of all 10 cells for each day in the POR was use as input into the Water Balance Model (WBM).

- Evaporation data is from IMC's 360,000 2x2 model run received on December 22, 2004. The data contained daily Evapotranspiration (ET) values for each of the 10 cells that represent the reservoir. A comparison of the ET data provided to historical evaporation data (from DBHYDRO) in the vicinity of the reservoir was performed. The data available from DBHYDRO is pan evaporation. A commonly accepted conversion from pan evaporation to actual evaporation is 70% of the pan evaporation equals actual evaporation. The comparison revealed little difference between the 2 values. Therefore, the average value of all 10 cells for each day in the POS was used as input into the WBM.

- Reservoir Bottom Elevation is 8.6 ft.

- Reservoir preliminary minimum depth will be set at 0.5 ft.

- Bank Maximum Height is 26.0 ft.

- Seepage information was obtained from Black & Veatch's preliminary results of the Test Cells program. Seepage values vary with the water depth in the reservoir and are based on having a 34 feet deep cut off wall (that goes to the bottom of the Fort Thompson formation) and a 20 feet deep seepage canal.
  Total Seepage Equation: **Total Seepage = (25.951*Depth)**
  Collected Seepage Equation: **Collected Seepage = ((0.0012*(Depth^2)) - (0.0464*Depth) + 1.0752) * Total Seepage**

- Irrigation Demands were obtained from OoM's 2x2 model, ECP 2010 run for a 190,000 ac-ft reservoir, received on June 17, 2005. Irrigation demand values are equal to (EARMA1 + EARMA2 + EARNH1 + EARNH2).

- Flows to STA 3/4 were obtained from OoM's 2x2 model, ECP 2010 run for a 190,000 ac-ft reservoir, received on June 17, 2005. These values were set as the environmental demands to be met by the reservoir and are equal to (WCS4S + EVBLSS).

OK

Figure 11 StorageZ Worksheet

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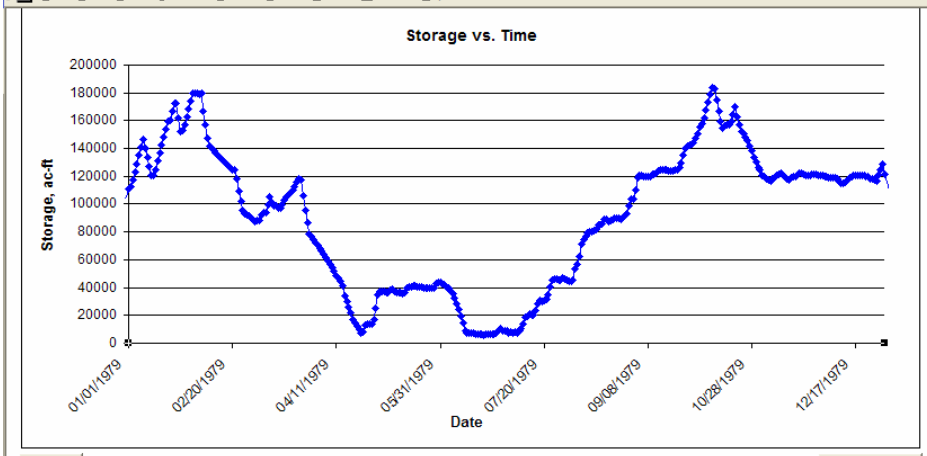


WBM Storage Graph

Summary Input:

Graph Start Date:	01/01/1979
Graph End Date:	12/31/1979

Figure 12 StageZ Worksheet

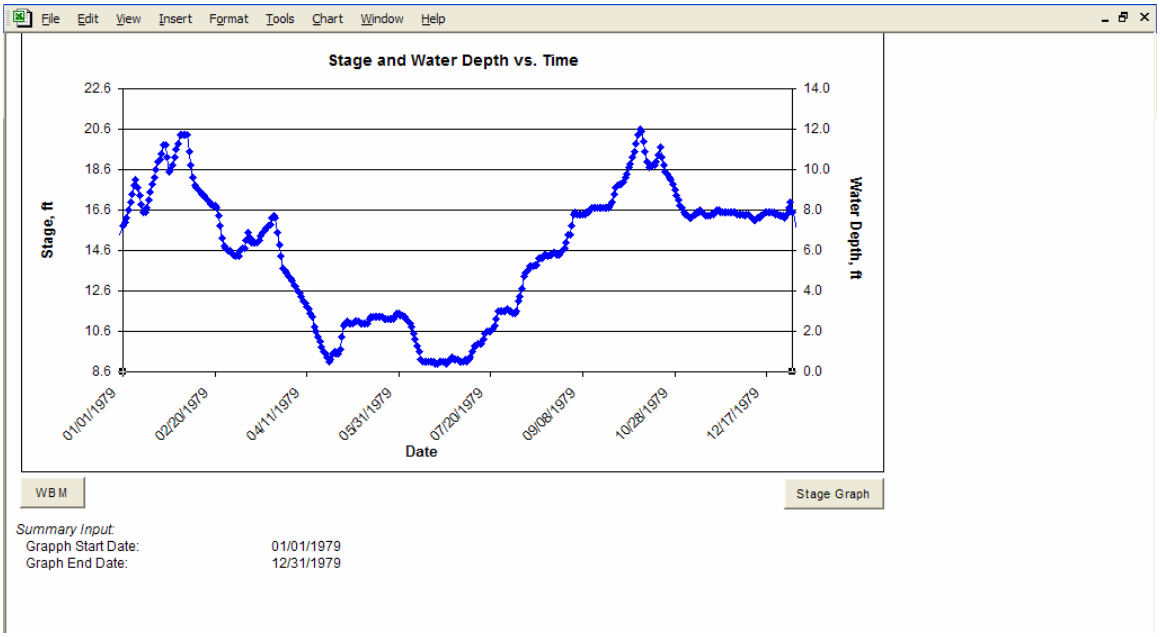


Figure 13 IrrigZ Worksheet

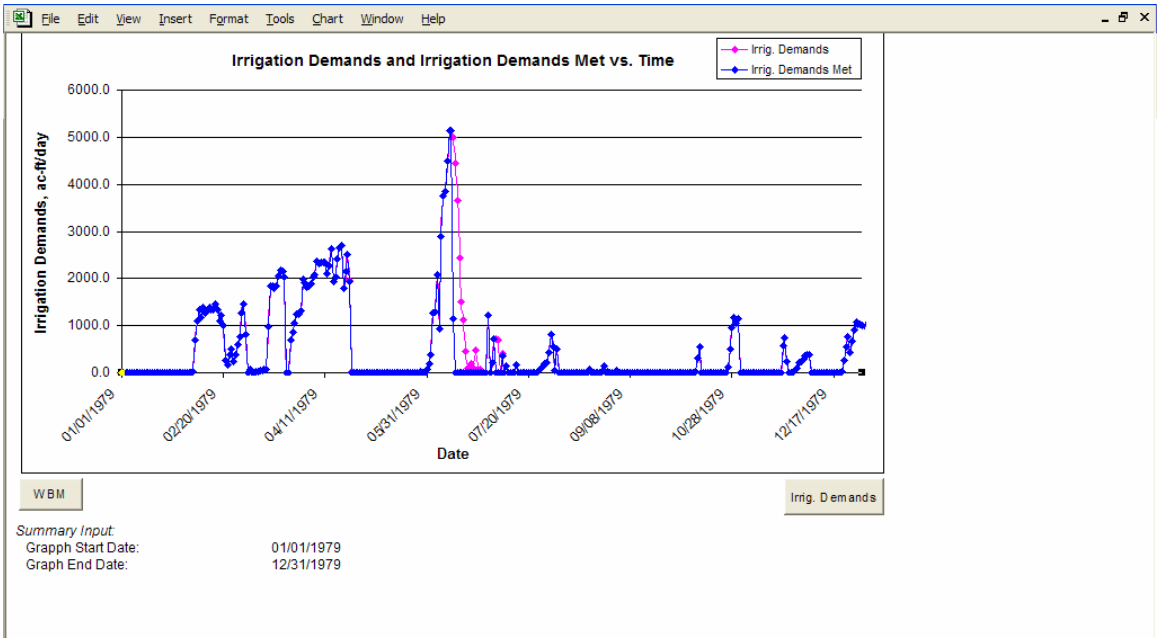


Figure 14 EnvZ Worksheet

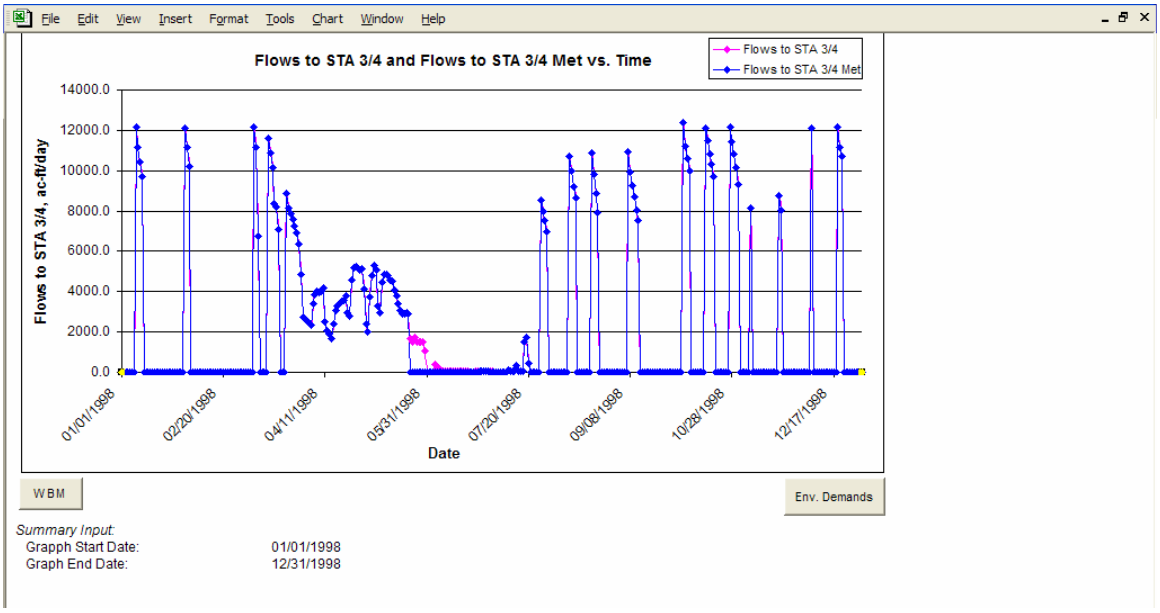


Figure 15 Stage-Storage Worksheet

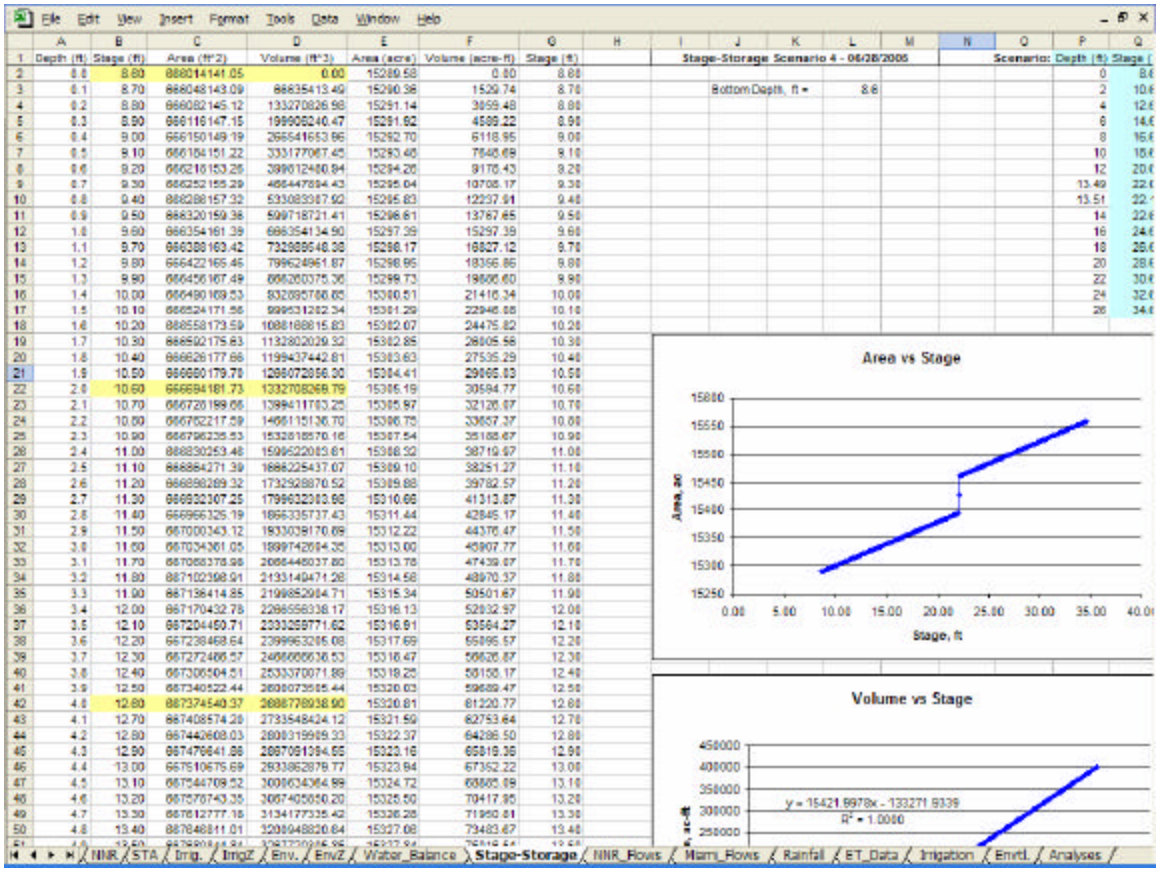
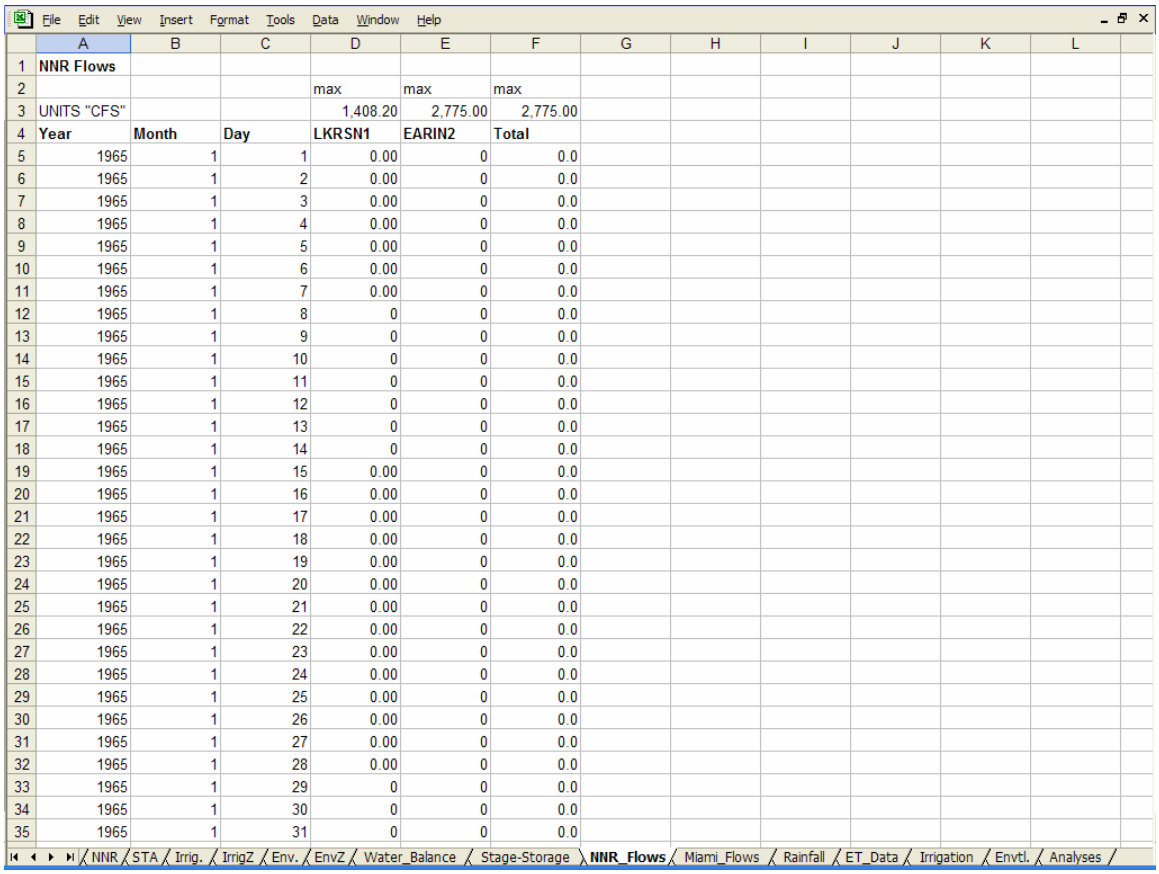


Figure 16 NNR_Flows Worksheet

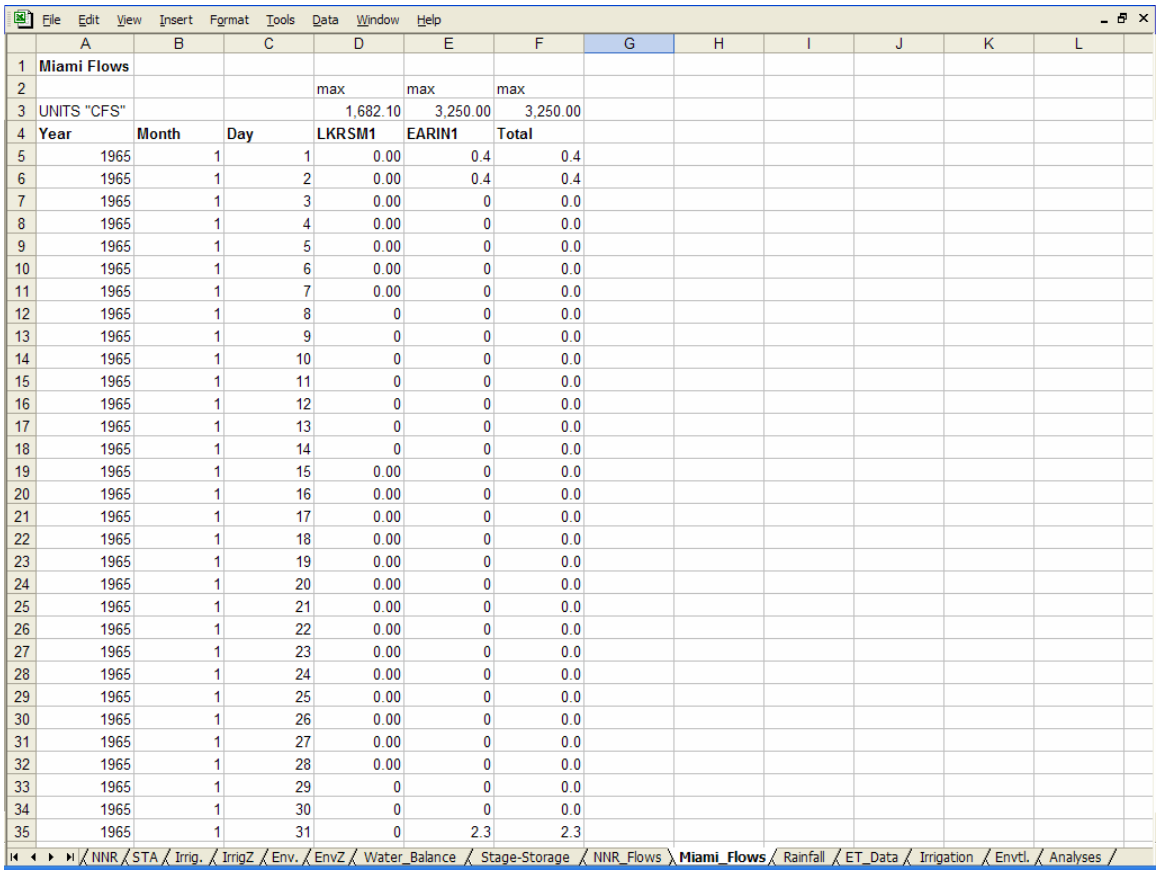


File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L
1	NNR Flows											
2				max	max	max						
3	UNITS "CFS"			1,408.20	2,775.00	2,775.00						
4	Year	Month	Day	LKRSN1	EARIN2	Total						
5	1965	1	1	0.00	0	0.0						
6	1965	1	2	0.00	0	0.0						
7	1965	1	3	0.00	0	0.0						
8	1965	1	4	0.00	0	0.0						
9	1965	1	5	0.00	0	0.0						
10	1965	1	6	0.00	0	0.0						
11	1965	1	7	0.00	0	0.0						
12	1965	1	8	0	0	0.0						
13	1965	1	9	0	0	0.0						
14	1965	1	10	0	0	0.0						
15	1965	1	11	0	0	0.0						
16	1965	1	12	0	0	0.0						
17	1965	1	13	0	0	0.0						
18	1965	1	14	0	0	0.0						
19	1965	1	15	0.00	0	0.0						
20	1965	1	16	0.00	0	0.0						
21	1965	1	17	0.00	0	0.0						
22	1965	1	18	0.00	0	0.0						
23	1965	1	19	0.00	0	0.0						
24	1965	1	20	0.00	0	0.0						
25	1965	1	21	0.00	0	0.0						
26	1965	1	22	0.00	0	0.0						
27	1965	1	23	0.00	0	0.0						
28	1965	1	24	0.00	0	0.0						
29	1965	1	25	0.00	0	0.0						
30	1965	1	26	0.00	0	0.0						
31	1965	1	27	0.00	0	0.0						
32	1965	1	28	0.00	0	0.0						
33	1965	1	29	0	0	0.0						
34	1965	1	30	0	0	0.0						
35	1965	1	31	0	0	0.0						

NNR / STA / Irrig. / IrrigZ / Env. / EnvZ / Water_Balance / Stage-Storage / NNR_Flows / Miami_Flows / Rainfall / ET_Data / Irrigation / Envtl. / Analyses /

Figure 17 Miami_Flows Worksheet



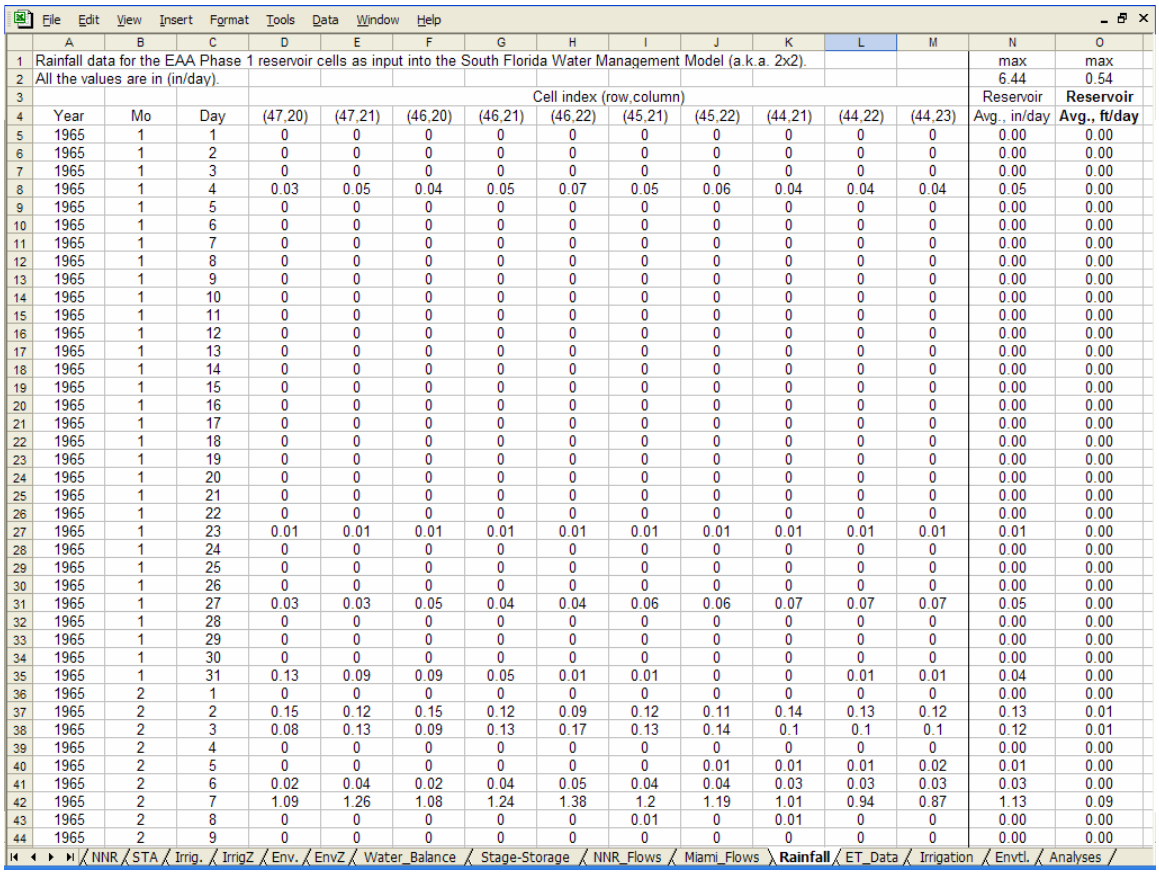
File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Miami Flows**											
2				max	max	max						
3	UNITS "CFS"			1,682.10	3,250.00	3,250.00						
4	**Year**	**Month**	**Day**	**LKRSM1**	**EARIN1**	**Total**						
5	1965	1	1	0.00	0.4	0.4						
6	1965	1	2	0.00	0.4	0.4						
7	1965	1	3	0.00	0	0.0						
8	1965	1	4	0.00	0	0.0						
9	1965	1	5	0.00	0	0.0						
10	1965	1	6	0.00	0	0.0						
11	1965	1	7	0.00	0	0.0						
12	1965	1	8	0	0	0.0						
13	1965	1	9	0	0	0.0						
14	1965	1	10	0	0	0.0						
15	1965	1	11	0	0	0.0						
16	1965	1	12	0	0	0.0						
17	1965	1	13	0	0	0.0						
18	1965	1	14	0	0	0.0						
19	1965	1	15	0.00	0	0.0						
20	1965	1	16	0.00	0	0.0						
21	1965	1	17	0.00	0	0.0						
22	1965	1	18	0.00	0	0.0						
23	1965	1	19	0.00	0	0.0						
24	1965	1	20	0.00	0	0.0						
25	1965	1	21	0.00	0	0.0						
26	1965	1	22	0.00	0	0.0						
27	1965	1	23	0.00	0	0.0						
28	1965	1	24	0.00	0	0.0						
29	1965	1	25	0.00	0	0.0						
30	1965	1	26	0.00	0	0.0						
31	1965	1	27	0.00	0	0.0						
32	1965	1	28	0.00	0	0.0						
33	1965	1	29	0	0	0.0						
34	1965	1	30	0	0	0.0						
35	1965	1	31	0	2.3	2.3						

NNR / STA / Irrig. / IrrigZ / Env. / EnvZ / Water_Balance / Stage-Storage / NNR_Flows / **Miami_Flows** / Rainfall / ET_Data / Irrigation / Envtl. / Analyses

Water Balance Model Inputs and Outputs

Figure 18 Rainfall Worksheet

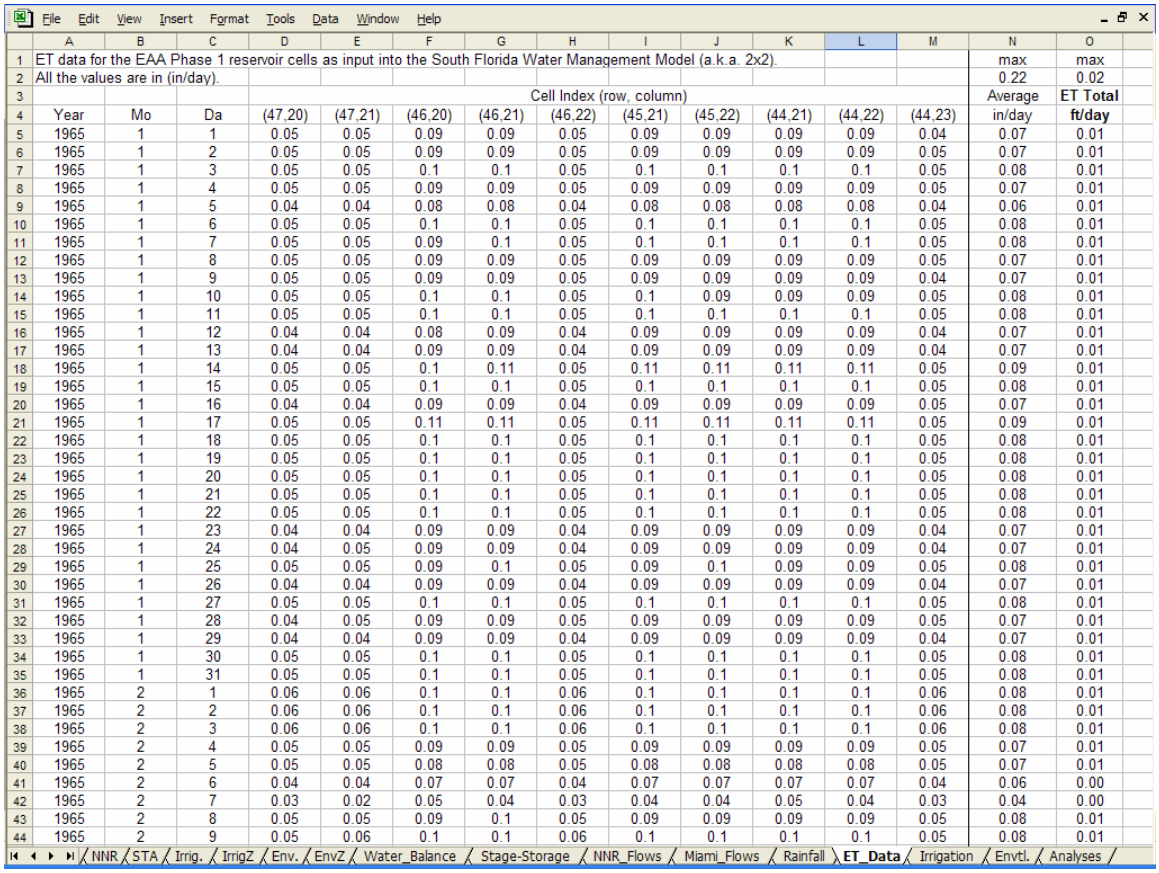


File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Rainfall data for the EAA Phase 1 reservoir cells as input into the South Florida Water Management Model (a.k.a. 2x2).													max	max
2	All the values are in (in/day).													6.44	0.54
3				Cell index (row,column)										Reservoir	**Reservoir**
4	Year	Mo	Day	(47,20)	(47,21)	(46,20)	(46,21)	(46,22)	(45,21)	(45,22)	(44,21)	(44,22)	(44,23)	Avg., in/day	**Avg., ft/day**
5	1965	1	1	0	0	0	0	0	0	0	0	0	0	0.00	0.00
6	1965	1	2	0	0	0	0	0	0	0	0	0	0	0.00	0.00
7	1965	1	3	0	0	0	0	0	0	0	0	0	0	0.00	0.00
8	1965	1	4	0.03	0.05	0.04	0.05	0.07	0.05	0.06	0.04	0.04	0.04	0.05	0.00
9	1965	1	5	0	0	0	0	0	0	0	0	0	0	0.00	0.00
10	1965	1	6	0	0	0	0	0	0	0	0	0	0	0.00	0.00
11	1965	1	7	0	0	0	0	0	0	0	0	0	0	0.00	0.00
12	1965	1	8	0	0	0	0	0	0	0	0	0	0	0.00	0.00
13	1965	1	9	0	0	0	0	0	0	0	0	0	0	0.00	0.00
14	1965	1	10	0	0	0	0	0	0	0	0	0	0	0.00	0.00
15	1965	1	11	0	0	0	0	0	0	0	0	0	0	0.00	0.00
16	1965	1	12	0	0	0	0	0	0	0	0	0	0	0.00	0.00
17	1965	1	13	0	0	0	0	0	0	0	0	0	0	0.00	0.00
18	1965	1	14	0	0	0	0	0	0	0	0	0	0	0.00	0.00
19	1965	1	15	0	0	0	0	0	0	0	0	0	0	0.00	0.00
20	1965	1	16	0	0	0	0	0	0	0	0	0	0	0.00	0.00
21	1965	1	17	0	0	0	0	0	0	0	0	0	0	0.00	0.00
22	1965	1	18	0	0	0	0	0	0	0	0	0	0	0.00	0.00
23	1965	1	19	0	0	0	0	0	0	0	0	0	0	0.00	0.00
24	1965	1	20	0	0	0	0	0	0	0	0	0	0	0.00	0.00
25	1965	1	21	0	0	0	0	0	0	0	0	0	0	0.00	0.00
26	1965	1	22	0	0	0	0	0	0	0	0	0	0	0.00	0.00
27	1965	1	23	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
28	1965	1	24	0	0	0	0	0	0	0	0	0	0	0.00	0.00
29	1965	1	25	0	0	0	0	0	0	0	0	0	0	0.00	0.00
30	1965	1	26	0	0	0	0	0	0	0	0	0	0	0.00	0.00
31	1965	1	27	0.03	0.03	0.05	0.04	0.04	0.06	0.06	0.07	0.07	0.07	0.05	0.00
32	1965	1	28	0	0	0	0	0	0	0	0	0	0	0.00	0.00
33	1965	1	29	0	0	0	0	0	0	0	0	0	0	0.00	0.00
34	1965	1	30	0	0	0	0	0	0	0	0	0	0	0.00	0.00
35	1965	1	31	0.13	0.09	0.09	0.05	0.01	0.01	0	0	0.01	0.01	0.04	0.00
36	1965	2	1	0	0	0	0	0	0	0	0	0	0	0.00	0.00
37	1965	2	2	0.15	0.12	0.15	0.12	0.09	0.12	0.11	0.14	0.13	0.12	0.13	0.01
38	1965	2	3	0.08	0.13	0.09	0.13	0.17	0.13	0.14	0.1	0.1	0.1	0.12	0.01
39	1965	2	4	0	0	0	0	0	0	0	0	0	0	0.00	0.00
40	1965	2	5	0	0	0	0	0	0	0.01	0.01	0.01	0.02	0.01	0.00
41	1965	2	6	0.02	0.04	0.02	0.04	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.00
42	1965	2	7	1.09	1.26	1.08	1.24	1.38	1.2	1.19	1.01	0.94	0.87	1.13	0.09
43	1965	2	8	0	0	0	0	0	0.01	0	0.01	0	0	0.00	0.00
44	1965	2	9	0	0	0	0	0	0	0	0	0	0	0.00	0.00

NNR / STA / Irrig. / IrrigZ / Env. / EnvZ / Water_Balance / Stage-Storage / NNR_Flows / Miami_Flows / **Rainfall** / ET_Data / Irrigation / Envtl. / Analyses /

Figure 19 ET_Data Worksheet

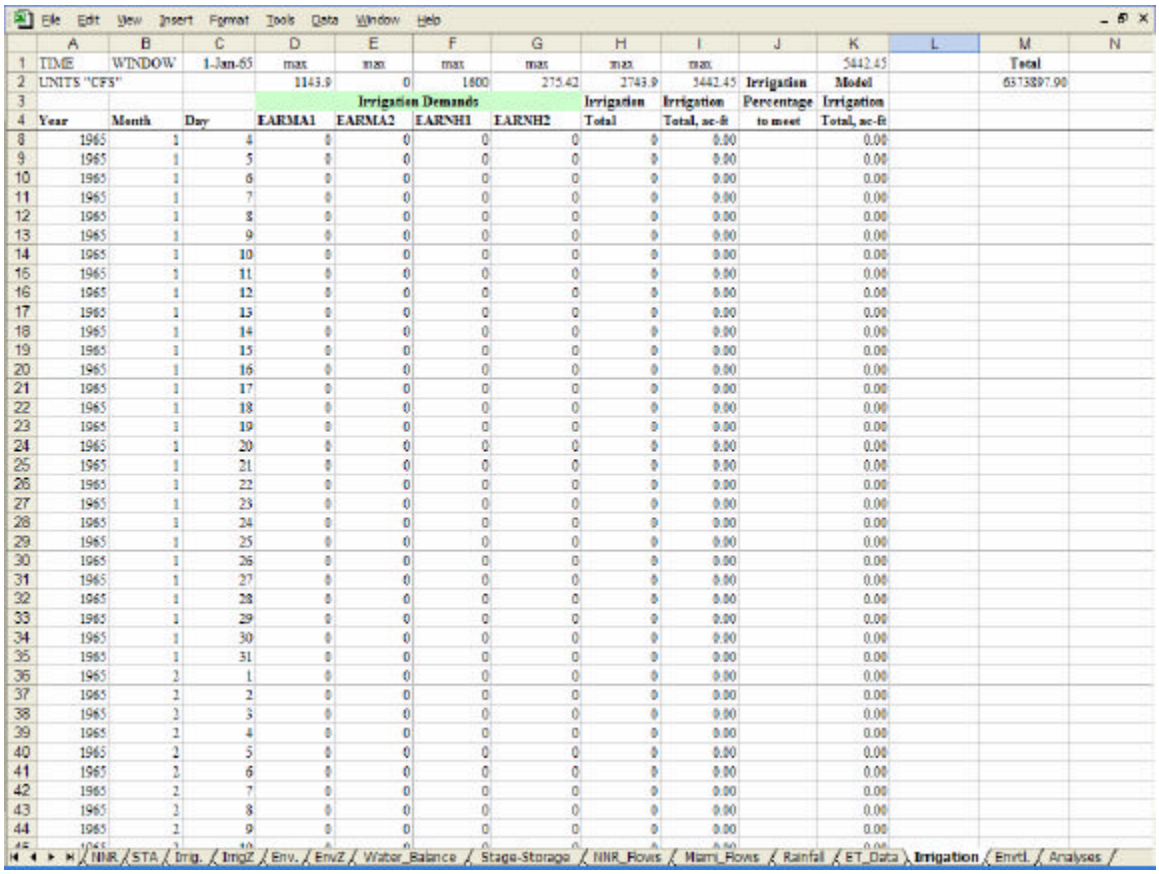


File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	ET data for the EAA Phase 1 reservoir cells as input into the South Florida Water Management Model (a.k.a. 2x2).													max	max
2	All the values are in (in/day).													0.22	0.02
3				Cell Index (row, column)										Average	ET Total
4	Year	Mo	Da	(47,20)	(47,21)	(46,20)	(46,21)	(46,22)	(45,21)	(45,22)	(44,21)	(44,22)	(44,23)	in/day	ft/day
5	1965	1	1	0.05	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.04	0.07	0.01
6	1965	1	2	0.05	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.05	0.07	0.01
7	1965	1	3	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
8	1965	1	4	0.05	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.05	0.07	0.01
9	1965	1	5	0.04	0.04	0.08	0.08	0.04	0.08	0.08	0.08	0.08	0.04	0.06	0.01
10	1965	1	6	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
11	1965	1	7	0.05	0.05	0.09	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
12	1965	1	8	0.05	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.05	0.07	0.01
13	1965	1	9	0.05	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.04	0.07	0.01
14	1965	1	10	0.05	0.05	0.1	0.1	0.05	0.1	0.09	0.09	0.09	0.05	0.08	0.01
15	1965	1	11	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
16	1965	1	12	0.04	0.04	0.08	0.09	0.04	0.09	0.09	0.09	0.09	0.04	0.07	0.01
17	1965	1	13	0.04	0.04	0.09	0.09	0.04	0.09	0.09	0.09	0.09	0.04	0.07	0.01
18	1965	1	14	0.05	0.05	0.1	0.11	0.05	0.11	0.11	0.11	0.11	0.05	0.09	0.01
19	1965	1	15	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
20	1965	1	16	0.04	0.04	0.09	0.09	0.04	0.09	0.09	0.09	0.09	0.05	0.07	0.01
21	1965	1	17	0.05	0.05	0.11	0.11	0.05	0.11	0.11	0.11	0.11	0.05	0.09	0.01
22	1965	1	18	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
23	1965	1	19	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
24	1965	1	20	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
25	1965	1	21	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
26	1965	1	22	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
27	1965	1	23	0.04	0.04	0.09	0.09	0.04	0.09	0.09	0.09	0.09	0.04	0.07	0.01
28	1965	1	24	0.04	0.05	0.09	0.09	0.04	0.09	0.09	0.09	0.09	0.04	0.07	0.01
29	1965	1	25	0.05	0.05	0.09	0.1	0.05	0.09	0.1	0.09	0.09	0.05	0.08	0.01
30	1965	1	26	0.04	0.04	0.09	0.09	0.04	0.09	0.09	0.09	0.09	0.04	0.07	0.01
31	1965	1	27	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
32	1965	1	28	0.04	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.05	0.07	0.01
33	1965	1	29	0.04	0.04	0.09	0.09	0.04	0.09	0.09	0.09	0.09	0.04	0.07	0.01
34	1965	1	30	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
35	1965	1	31	0.05	0.05	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.05	0.08	0.01
36	1965	2	1	0.06	0.06	0.1	0.1	0.06	0.1	0.1	0.1	0.1	0.06	0.08	0.01
37	1965	2	2	0.06	0.06	0.1	0.1	0.06	0.1	0.1	0.1	0.1	0.06	0.08	0.01
38	1965	2	3	0.06	0.06	0.1	0.1	0.06	0.1	0.1	0.1	0.1	0.06	0.08	0.01
39	1965	2	4	0.05	0.05	0.09	0.09	0.05	0.09	0.09	0.09	0.09	0.05	0.07	0.01
40	1965	2	5	0.05	0.05	0.08	0.08	0.05	0.08	0.08	0.08	0.08	0.05	0.07	0.01
41	1965	2	6	0.04	0.04	0.07	0.07	0.04	0.07	0.07	0.07	0.07	0.04	0.06	0.00
42	1965	2	7	0.03	0.02	0.05	0.04	0.03	0.04	0.04	0.05	0.04	0.03	0.04	0.00
43	1965	2	8	0.05	0.05	0.09	0.1	0.05	0.09	0.09	0.09	0.09	0.05	0.08	0.01
44	1965	2	9	0.05	0.06	0.1	0.1	0.06	0.1	0.1	0.1	0.1	0.05	0.08	0.01

NNR STA Irrig. IrrigZ Env. EnvZ Water_Balance Stage-Storage NNR_Flows Miami_Flows Rainfall **ET_Data** Irrigation Envtl. Analyses

Figure 20 Irrigation Worksheet



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	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	TIME	WINDOW	1-Jan-65	max	max	max	max	max	max		5442.45		Total	
2	UNITS "CFS"			1143.9	0	1800	275.42	2743.9	5442.45	Irrigation	Model		6573897.90	
3				Irrigation Demands				Irrigation	Irrigation	Percentage	Irrigation			
4	Year	Month	Day	EARMA1	EARMA2	EARNH1	EARNH2	Total	Total, ac-ft	to meet	Total, ac-ft			
8	1965	1	4	0	0	0	0	0	0.00		0.00			
9	1965	1	5	0	0	0	0	0	0.00		0.00			
10	1965	1	6	0	0	0	0	0	0.00		0.00			
11	1965	1	7	0	0	0	0	0	0.00		0.00			
12	1965	1	8	0	0	0	0	0	0.00		0.00			
13	1965	1	9	0	0	0	0	0	0.00		0.00			
14	1965	1	10	0	0	0	0	0	0.00		0.00			
15	1965	1	11	0	0	0	0	0	0.00		0.00			
16	1965	1	12	0	0	0	0	0	0.00		0.00			
17	1965	1	13	0	0	0	0	0	0.00		0.00			
18	1965	1	14	0	0	0	0	0	0.00		0.00			
19	1965	1	15	0	0	0	0	0	0.00		0.00			
20	1965	1	16	0	0	0	0	0	0.00		0.00			
21	1965	1	17	0	0	0	0	0	0.00		0.00			
22	1965	1	18	0	0	0	0	0	0.00		0.00			
23	1965	1	19	0	0	0	0	0	0.00		0.00			
24	1965	1	20	0	0	0	0	0	0.00		0.00			
25	1965	1	21	0	0	0	0	0	0.00		0.00			
26	1965	1	22	0	0	0	0	0	0.00		0.00			
27	1965	1	23	0	0	0	0	0	0.00		0.00			
28	1965	1	24	0	0	0	0	0	0.00		0.00			
29	1965	1	25	0	0	0	0	0	0.00		0.00			
30	1965	1	26	0	0	0	0	0	0.00		0.00			
31	1965	1	27	0	0	0	0	0	0.00		0.00			
32	1965	1	28	0	0	0	0	0	0.00		0.00			
33	1965	1	29	0	0	0	0	0	0.00		0.00			
34	1965	1	30	0	0	0	0	0	0.00		0.00			
35	1965	1	31	0	0	0	0	0	0.00		0.00			
36	1965	2	1	0	0	0	0	0	0.00		0.00			
37	1965	2	2	0	0	0	0	0	0.00		0.00			
38	1965	2	3	0	0	0	0	0	0.00		0.00			
39	1965	2	4	0	0	0	0	0	0.00		0.00			
40	1965	2	5	0	0	0	0	0	0.00		0.00			
41	1965	2	6	0	0	0	0	0	0.00		0.00			
42	1965	2	7	0	0	0	0	0	0.00		0.00			
43	1965	2	8	0	0	0	0	0	0.00		0.00			
44	1965	2	9	0	0	0	0	0	0.00		0.00			

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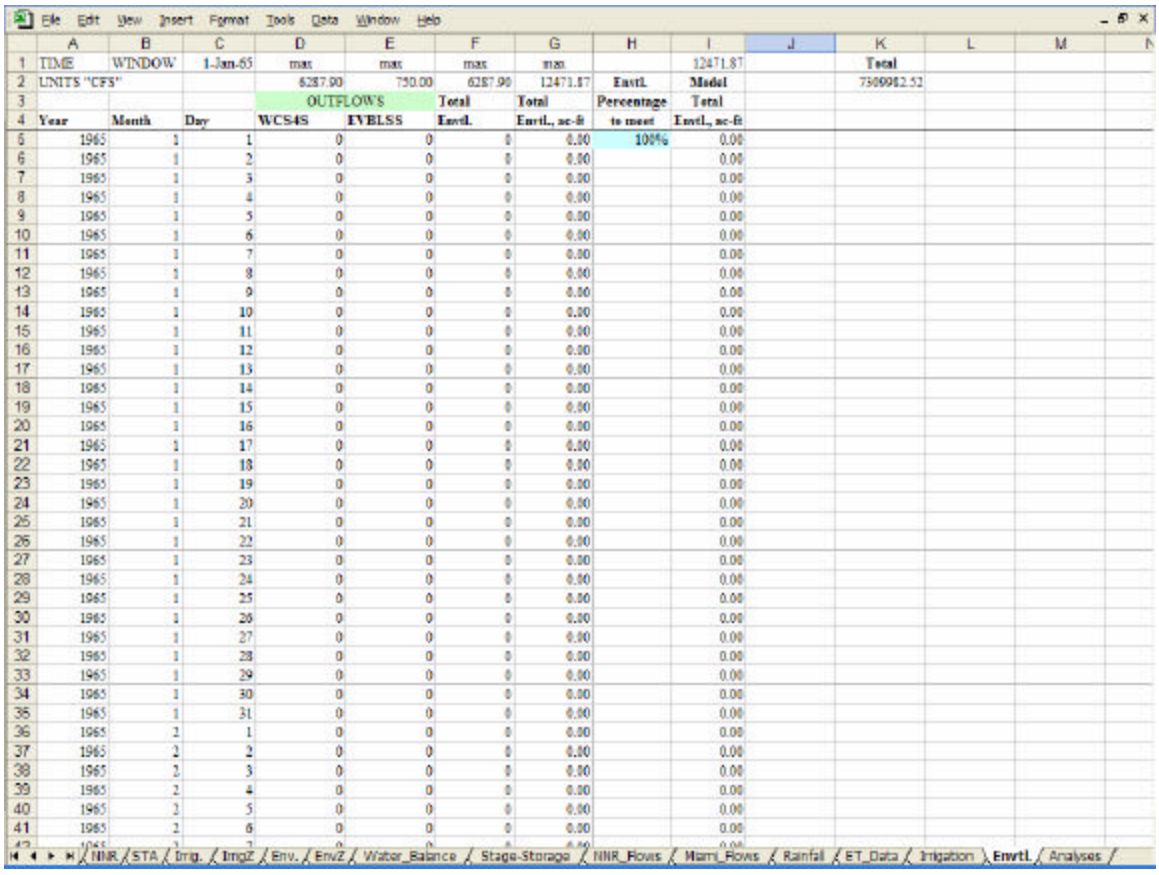
Figure 21 Envtl. Worksheet



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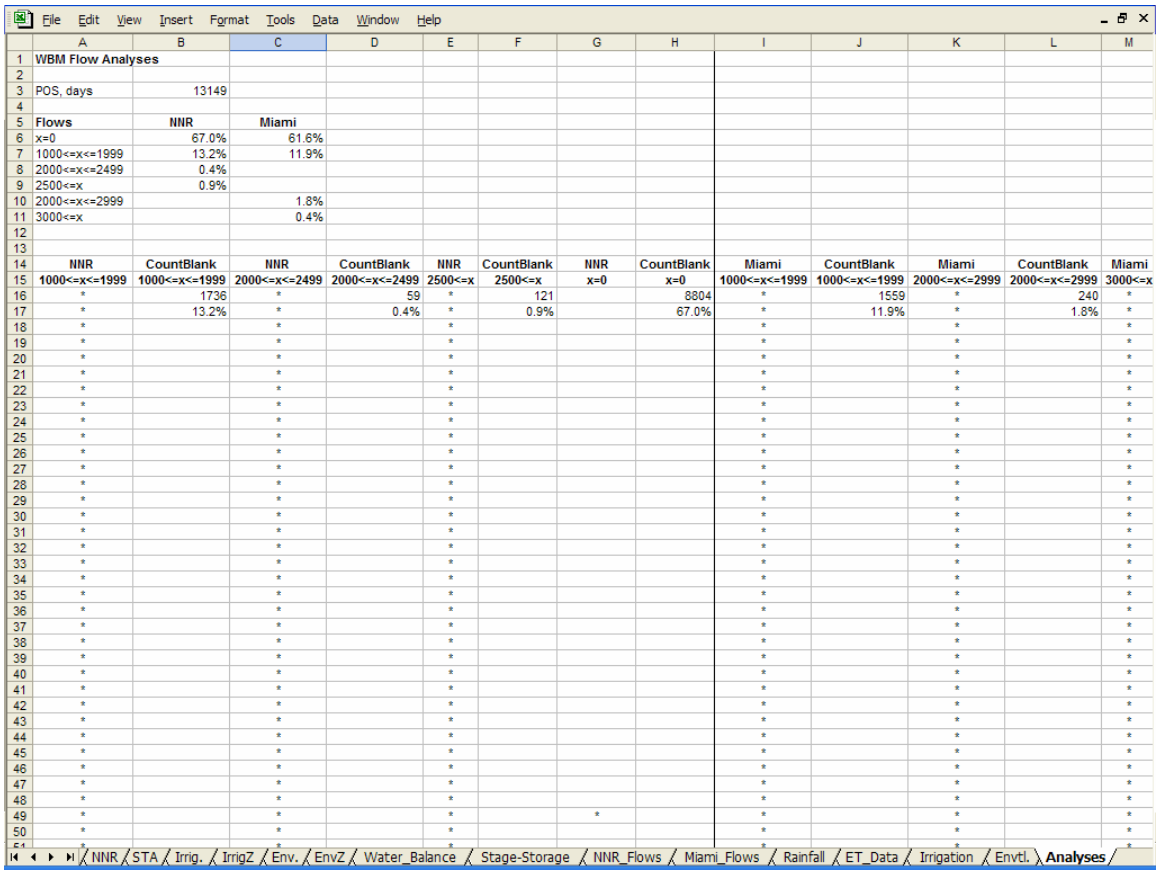
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	TIME	WINDOW	1-Jan-65	max	max	max	min		12471.87		Total		
2	UNITS "CFS"			6287.90	750.00	6287.90	12471.87	Envtl.	Model		7369982.52		
3				OUTFLOWS		Total	Total	Percentage	Total				
4	Year	Month	Day	WCS4S	EVBLSS	Envtl.	Envtl., ac-ft	to meet	Envtl., ac-ft				
5	1965	1	1	0	0	0	0.00	100%	0.00				
6	1965	1	2	0	0	0	0.00		0.00				
7	1965	1	3	0	0	0	0.00		0.00				
8	1965	1	4	0	0	0	0.00		0.00				
9	1965	1	5	0	0	0	0.00		0.00				
10	1965	1	6	0	0	0	0.00		0.00				
11	1965	1	7	0	0	0	0.00		0.00				
12	1965	1	8	0	0	0	0.00		0.00				
13	1965	1	9	0	0	0	0.00		0.00				
14	1965	1	10	0	0	0	0.00		0.00				
15	1965	1	11	0	0	0	0.00		0.00				
16	1965	1	12	0	0	0	0.00		0.00				
17	1965	1	13	0	0	0	0.00		0.00				
18	1965	1	14	0	0	0	0.00		0.00				
19	1965	1	15	0	0	0	0.00		0.00				
20	1965	1	16	0	0	0	0.00		0.00				
21	1965	1	17	0	0	0	0.00		0.00				
22	1965	1	18	0	0	0	0.00		0.00				
23	1965	1	19	0	0	0	0.00		0.00				
24	1965	1	20	0	0	0	0.00		0.00				
25	1965	1	21	0	0	0	0.00		0.00				
26	1965	1	22	0	0	0	0.00		0.00				
27	1965	1	23	0	0	0	0.00		0.00				
28	1965	1	24	0	0	0	0.00		0.00				
29	1965	1	25	0	0	0	0.00		0.00				
30	1965	1	26	0	0	0	0.00		0.00				
31	1965	1	27	0	0	0	0.00		0.00				
32	1965	1	28	0	0	0	0.00		0.00				
33	1965	1	29	0	0	0	0.00		0.00				
34	1965	1	30	0	0	0	0.00		0.00				
35	1965	1	31	0	0	0	0.00		0.00				
36	1965	2	1	0	0	0	0.00		0.00				
37	1965	2	2	0	0	0	0.00		0.00				
38	1965	2	3	0	0	0	0.00		0.00				
39	1965	2	4	0	0	0	0.00		0.00				
40	1965	2	5	0	0	0	0.00		0.00				
41	1965	2	6	0	0	0	0.00		0.00				

NNR / STA / Irrig. / IrrigZ / Env. / EnvZ / Water_Balance / Stage-Storage / NNR_Flows / Miami_Flows / Rainfall / ET_Data / Irrigation / Envtl. / Analyses /

Figure 22 Analyses Worksheet



File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**WBM Flow Analyses**												
2													
3	POS, days	13149											
4													
5	**Flows**	**NNR**	**Miami**										
6	x=0	67.0%	61.6%										
7	1000<=x<=1999	13.2%	11.9%										
8	2000<=x<=2499	0.4%											
9	2500<=x	0.9%											
10	2000<=x<=2999		1.8%										
11	3000<=x		0.4%										
12													
13													
14	**NNR**	**CountBlank**	**NNR**	**CountBlank**	**NNR**	**CountBlank**	**NNR**	**CountBlank**	**Miami**	**CountBlank**	**Miami**	**CountBlank**	**Miami**
15	**1000<=x<=1999**	**1000<=x<=1999**	**2000<=x<=2499**	**2000<=x<=2499**	**2500<=x**	**2500<=x**	**x=0**	**x=0**	**1000<=x<=1999**	**1000<=x<=1999**	**2000<=x<=2999**	**2000<=x<=2999**	**3000<=x**
16	*	1736	*	59	*	121		8804	*	1559	*	240	*
17	*	13.2%	*	0.4%	*	0.9%		67.0%	*	11.9%	*	1.8%	*
18	*		*		*				*		*		*
19	*		*		*				*		*		*
20	*		*		*				*		*		*
21	*		*		*				*		*		*
22	*		*		*				*		*		*
23	*		*		*				*		*		*
24	*		*		*				*		*		*
25	*		*		*				*		*		*
26	*		*		*				*		*		*
27	*		*		*				*		*		*
28	*		*		*				*		*		*
29	*		*		*				*		*		*
30	*		*		*				*		*		*
31	*		*		*				*		*		*
32	*		*		*				*		*		*
33	*		*		*				*		*		*
34	*		*		*				*		*		*
35	*		*		*				*		*		*
36	*		*		*				*		*		*
37	*		*		*				*		*		*
38	*		*		*				*		*		*
39	*		*		*				*		*		*
40	*		*		*				*		*		*
41	*		*		*				*		*		*
42	*		*		*				*		*		*
43	*		*		*				*		*		*
44	*		*		*				*		*		*
45	*		*		*				*		*		*
46	*		*		*				*		*		*
47	*		*		*				*		*		*
48	*		*		*				*		*		*
49	*		*		*		*		*		*		*
50	*		*		*				*		*		*
51	*		*		*				*		*		*

NNR | STA | Irrig. | IrrigZ | Env. | EnvZ | Water_Balance | Stage-Storage | NNR_Flows | Miami_Flows | Rainfall | ET_Data | Irrigation | Envtl. | **Analyses**